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An Alternative to Ready, Fire, Aim: A New Framework to Link Environmental Targets in Environmental Law

Michael P. Vandenberg

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An Alternative to Ready, Fire, Aim: A New Framework to Link Environmental Targets in Environmental Law*

BY MICHAEL P. VANDENBERGH**

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** Partner, Latham & Watkins, Washington, D.C. B.A 1983, University of North Carolina; J.D. 1987, University of Virginia. The author is grateful for the comments provided by Linda Breggin, Jeffrey Dunoff, David Hayes, Lisa Heinzerling, Margaret Mellon, Richard Merrill, Mark Newell, David Skeel, and Robert Sussman. Any errors, of course, are the author's, and the conclusions of this Article are solely the author's personal views.

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INTRODUCTION

The turbulent environmental regulatory climate of the last decade has included criticisms from all sides, as well as reform proposals from the executive branch,¹ Congress,² and a number of public and private organizations. These proposals have ranged from incremental reforms to calls for development of a “new paradigm” for environmental law.³ Although a number of innovations have been added to the command and control regulatory system during this period, the proposals and reforms have not calmed the waters of the regulatory debate. They have neither forestalled the criticisms and backlash against environmental regulation, nor generated confidence that the environment will be protected in the long run.⁴

The turbulence of the regulatory debate and the limited success of reform efforts are the product of a deeper crisis in environmental law: the dominant command and control approaches have addressed many of the most obvious environmental problems, but they are not well suited for the remaining “second generation” problems. Reform proposals aimed at addressing these second generation problems understandably face resistance unless they can demonstrate that they will achieve clearly defined environmental targets. The current command and control system, however, has not produced defined environmental goals against which to measure the potential results of these reform proposals. Like Oakland, when it comes to effective national environmental goals, “there is no there there.”⁵

¹ See U.S. ENVIRONMENTAL PROTECTION AGENCY, REINVENTING ENVIRONMENTAL REGULATION (1995); see also *Clinton Plan Sets Program to Lift Rules Burdening Those Who Exceed Standards*, Daily Env't Rep. (BNA) AA-1 (Mar. 17, 1995).

² See, e.g., H.R. REP. NO. 104-9 (1995); S. REP. NO. 104-291 (1995); S. REP. NO. 104-333 (1995); S. REP. NO. 104-334 (1995); Unfunded Mandates Reform Act, Pub. L. No. 104-4, 109 Stat. 48 (1995).

³ See *infra* Part III.A-B (notes 217-51 and accompanying text).

⁴ See *infra* Part III.C (notes 252-64 and accompanying text). For a review describing the new proposals as part of a “revolution in federal environmental policy,” see Margaret Kriz, *The New Abolitionists: A New Shade of Green*, NAT'L J., Mar. 18, 1995, at 661, 661-65.

⁵ GERTRUDE STEIN, EVERYBODY'S AUTOBIOGRAPHY (1937). As discussed *infra* Part II.A.3 (notes 158-60 and accompanying text), numerous environmental goals exist, but they have little impact on most environmental decisions.

In lieu of environmental outcomes, the reform debate has focused on the implementing mechanisms for environmental law — principally the command and control model, as implemented through best available technology requirements, and the market model.⁶ This focus on the *means* of environmental law has occurred despite the absence of anything approaching a consensus on the *ends*: the desired state of the environment and the resulting public and private responsibilities for achieving that state.⁷ In the process, neither the market-driven environmental law reforms popular in legal scholarship nor other proposed reforms have developed into a genuine new construct for environmental law.⁸ With no dominant new approach to define objectives, the debate over environmental law is acrimonious and shows little prospect for producing substantial change.⁹

⁶ See *infra* Part II.A.2 (notes 147-57 and accompanying text).

⁷ The absence of a linkage between a regulatory system and its performance measurements extends to many regulatory fields and is not limited to environmental law. See, e.g., Cass R. Sunstein, *Paradoxes of the Regulatory State*, 57 U. CHI. L. REV. 407, 408 (1990) [hereinafter Sunstein, *Paradoxes*].

⁸ See *infra* Part III (notes 217-65 and accompanying text). Although widely used and misused, the concepts of paradigms and paradigm shifts are valuable to understanding environmental law reform. These concepts were first presented by Thomas Kuhn. See THOMAS S. KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* (1961). For a discussion of the recent search for a paradigm in environmental law, see Amanda G. Birrell, *Brother, Can You Paradigm?*, SONREEL NEWS (A.B.A. Sec. Nat. Resources, Energy, and Envtl. L.), Fall 1994, at 1. See also CAROL ROSE & BRUCE ACKERMAN, *RETHINKING THE PROGRESSIVE AGENDA: THE REFORM OF THE AMERICAN REGULATORY STATE* (1993) (recommending that the federal government set broad effluent guidelines and contract with states for implementation); David A. Farber, *Revitalizing Regulation*, 91 MICH. L. REV. 1278 (1993) (book review) (providing overview of recent books analyzing new approaches); Zygmunt J.B. Plater, *From the Beginning, A Fundamental Shift of Paradigms: A Theory and Short History of Environmental Law*, 27 LOY. L.A. L. REV. 981 (1994). Most recently, the EPA has embraced both the command and control and market models, implementing both the technology-based requirements and market mechanisms of the 1990 Amendments to the Clean Air Act, while promoting a new focus on voluntary approaches, sectors, and ecosystems. See U.S. ENVIRONMENT PROTECTION AGENCY, *STRATEGIC PLAN: THE NEW GENERATION OF ENVIRONMENTAL PROTECTION* (1994). The 104th Congress, to the extent it was characterized by the "Contract with America," renewed the de-regulatory fervor of the early 1980s through legislation on risk, takings, and regulatory reform. See, e.g., *Unfunded Mandates Reform Act*, Pub. L. No. 104-4, 109 Stat. 48 (1995).

⁹ See, e.g., David Clark, *The Elusive Middle Ground in Environmental*

This Article asserts that although the focus of the current environmental law reform debate on the means of environmental regulation is misplaced, the elements of a new approach are beginning to emerge. Several recent studies have recognized the need to identify environmental outcomes or environmental indicators,¹⁰ and a number of legal scholars have identified the ends-versus-means problem.¹¹ These scholars also have identified the “democracy deficit”¹² that arises from the limited citizen participation in the debate regarding command and control regulations.¹³ In doing so, the scholars have provided a foundation in democratic theory for the use of environmental outcomes as the starting-point for environmental law reform.

Developments abroad, particularly in the Netherlands, reinforce the notion that environmental law reform may arise from a greater focus on ultimate environmental objectives, such as desired ambient environmental conditions. Indeed, an explicit allocation of the burdens of achieving those conditions may be critical to reform. The underlying concept of the Dutch approach is an explicit determination of environmental ends at three levels: (1) the desired state of the environment (which I call the “Level I” goal); (2) a translation of the desired state of the environment into more specific environmental conditions and the emission reductions

Policy, ISSUES IN SCI. AND TECH., Spring 1995, at 63. *See infra* Part III.D (note 265 and accompanying text).

¹⁰ *See infra* note 251 and accompanying text.

¹¹ These scholars include Professors Bruce Ackerman, Richard Stewart, and Cass Sunstein. One of the first works to identify the ends-versus-means problem was BRUCE A. ACKERMAN & WILLIAM T. HASSLER, CLEAN COAL/DIRTY AIR 5, 54-57, 117-21, 123-27 (1981). *See also* Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1340 (1985) [hereinafter Ackerman & Stewart, *Reforming Environmental Law*] (distinguishing between reform of “criteria and procedures which Congress, agencies, and the courts use in setting environmental goals” and reform of “the means by which the goals . . . are implemented in the real world”) (emphasis omitted).

¹² Richard B. Stewart, *Antidotes for the “American Disease,”* 20 ECOLOGY L.Q. 85, 85 (1993) [hereinafter Stewart, *Antidotes*].

¹³ *See, e.g.,* Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law: The Democratic Case for Market Incentives*, 13 COLUM. J. ENVTL. L. 171, 185 (1988) [hereinafter Ackerman & Stewart, *Reforming Environmental Law: The Democratic Case*]. *But see* Lisa Heinzerling, *Selling Pollution, Forcing Democracy*, 14 STAN. ENVTL. L.J. 300 (1995) (maintaining that, in enacting the 1990 Clean Air Act Amendments acid rain precursor trading provisions, Congress did not actually debate the desired level of total allowable emissions).

and other actions necessary to achieve that state (the "Level II" goals); and (3) an allocation of these emission reduction responsibilities among economic and geographic sectors (the "Level III" goal).¹⁴ The identification of ends in this approach (which I call the "Framework Approach") may illuminate many of the problems with the environmental reform debate and environmental law in the United States.

The insight of the Framework Approach is not that a restatement of environmental goals will lead to environmental law reform. Environmental laws in the United States already include a broad aspirational goal in the National Environmental Policy Act of 1969 ("NEPA"),¹⁵ similar broad goals in other environmental statutes,¹⁶ and provisions for more specific ambient goals.¹⁷ Instead, the insight arises from two important

¹⁴ See *infra* Part IV.A.2 (notes 273-317 and accompanying text). In addition to the domestic environmental reform efforts underway, elements of this new ends-based approach abroad can be found in the writings of a number of scholars. See, e.g., ALLEN HAMMOND ET AL., ENVIRONMENTAL INDICATORS: A SYSTEMATIC APPROACH TO MEASURING AND REPORTING ON ENVIRONMENTAL POLICY PERFORMANCE IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT (1995) [hereinafter HAMMOND ET AL., ENVIRONMENTAL INDICATORS] (noting the potential for expanding the role of environmental indicators); HUEY D. JOHNSON, GREEN PLANS: GREENPRINT FOR SUSTAINABILITY (1995); Richard B. Stewart, *Environmental Regulation and International Competitiveness*, 102 YALE L.J. 2039, 2090-93 (1993) [hereinafter Stewart, *Environmental Regulation*] (reviewing the use of voluntary agreements in several European countries); Brad Crabtree, *Make a New "Contract for the Environment,"* CHRISTIAN SCI. MONITOR, Feb. 1, 1995, at 18; Hans Van Zijst, *A Change in the Culture*, ENVTL. F., May/June 1993, at 13, 14 (reviewing the Dutch covenant approach).

¹⁵ 42 U.S.C. §§ 4321-4347 (1994) (corresponds to Pub. L. No. 91-190, Jan. 1, 1970, as amended by Pub. L. No. 94-52, July 3, 1975, Pub. L. No. 94-83, Aug. 9, 1975, and Pub. L. No. 97-258, Sept. 13, 1982). NEPA expresses a national goal "to create and maintain conditions under which man and nature can exist in productive harmony." *Id.* § 4321. See *infra* notes 86-89 and accompanying text.

¹⁶ See, e.g., Federal Water Pollution Control Act § 101, 33 U.S.C. § 1251 (1994) (establishing a national goal "to restore and maintain the chemical, physical and biological integrity of the Nation's waters," along with an initial, interim goal of making waters fishable and swimmable "wherever attainable" by 1983, and eliminating the discharge of pollutants into navigable waters by 1985).

¹⁷ Examples of ambient environmental goals include the National Ambient Air Quality Standards ("NAAQS") of the Clean Air Act, Clean Air Act Amendments of 1970 § 109, 42 U.S.C. § 7404 (1994), and the water quality standards of the Clean Water Act, Federal Water Pollution Control Act of 1972

distinctions between the comprehensive system based on environmental conditions and allocated responsibilities developed in the Netherlands, and the patchwork of broad and narrow goals that has been cobbled together over the last thirty years in the United States.¹⁸ First, the patchwork of goals in the United States provides little or no context in which to debate environmental law reform.¹⁹ Second, in the absence of the Framework Approach goals at all three levels, environmental law reform measures in the United States are blocked by several false choices that arise from commonly accepted lessons about the early development of environmental law.²⁰

This Article begins with a brief overview of the state of the environment and the lessons learned from the early development of the command and control system.²¹ It then explores recent reform proposals and the scholarship on the democratic impact of means-based approaches.²² The Article next examines the new model that is emerging in the Netherlands and other countries, and identifies the critical feature of the new model: the development of context for environmental decision-making at each of the three levels discussed above.²³ The Article concludes by analyzing the implications of this Framework Approach for

§ 303, 33 U.S.C. § 1313 (1994). In fact, several scholars have argued that Congress's use of broad goals statutes underlies many of the current problems by appearing to address environmental problems without resolving the many difficult trade-offs implicit in their implementation. *See, e.g.,* Heinzerling, *supra* note 13, at 338-39 ("One failing of environmental law in this country has been its tendency to establish ends without specific means."); David Schoenbrod, *Goals Statutes or Rules Statutes: The Case of the Clean Air Act*, 30 UCLA L. REV. 740 (1983). Many of these commentators suggest that Congress should be more prescriptive and delegate less to the EPA. This Article suggests that greater congressional decisionmaking may be beneficial, but that the decisions made by Congress should be the Level I, II, and III goals or ends, not the specific implementing mechanisms or means of environmental regulation.

¹⁸ *See infra* Part II.A (notes 86-160 and accompanying text).

¹⁹ *See infra* Part III.C (notes 252-64 and accompanying text). For a discussion of the role of factions in the debate and in the development of command and control regulations, see, for example, Richard B. Stewart, *Madison's Nightmare*, 57 U. CHI. L. REV. 335 (1990) [hereinafter Stewart, *Madison's Nightmare*].

²⁰ *See infra* Part III.C.2 (notes 262-64 and accompanying text).

²¹ *See infra* Parts I-II (notes 1-216 and accompanying text).

²² *See infra* Part III (notes 217-65 and accompanying text).

²³ *See infra* Part IV (notes 266-322 and accompanying text).

the environmental debate and for environmental law reform in the United States.²⁴

Although the Framework Approach would be difficult to implement in the United States, its core principles may reveal many of the underlying problems both with the environmental reform debate and with environmental law reform in the United States.²⁵ Ironically, although the ends-based concepts adopted abroad stem from a European tradition of governmental involvement in social planning that is not favored in the United States, the identification of ends in the Framework Approach may be a prerequisite for reducing the intrusiveness and costs of the command and control system while improving environmental protection.

The Framework Approach discussed in this paper is unquestionably utopian. As one author noted in a recent article, however, environmental law reform has suffered from an absence of scholarship that explores “‘relevant utopias.’”²⁶ I invite the reader to suspend disbelief on the practical feasibility of the Framework Approach long enough to assess whether its underlying concepts reveal a new perspective on the environmental law reform debate and a new set of questions to be answered about environmental law reform.²⁷

I. THE ENVIRONMENT

Despite a paucity of data on long-term trends in the state of the environment, it has become axiomatic that the environmental statutes of the 1970s led to substantial improvements in the quality of the environment in many areas. Unfortunately, a second proposition also has become axiomatic: that the existing command and control environmental

²⁴ See *infra* Part V (notes 323-74 and accompanying text).

²⁵ For a discussion of how the Framework Approach may show these lessons to be false, see *infra* Part VI (notes 375-410 and accompanying text).

²⁶ See William F. Pedersen, “*Protecting the Environment*” — *What Does That Mean?*, 27 LOY. L.A. L. REV. 969, 970 (1994) [hereinafter Pedersen, “*Protecting the Environment*”] (quoting STANLEY HOFFMAN, CONTEMPORARY THEORY IN INTERNATIONAL RELATIONS 184 (1960)); see also Cass R. Sunstein, *Democratizing America Through Law*, 25 SUFFOLK U. L. REV. 949, 950 (1991) [hereinafter Sunstein, *Democratizing America*] (noting that “in thinking about reform of American public law, the general defects of the system have been lost too often, in favor of discussion of unnecessarily incremental changes”).

²⁷ In launching the now over-used concept of a paradigm shift, Thomas Kuhn observed that a principal effect of such a shift is to reveal a new universe of questions to be asked and research to be conducted. See KUHN, *supra* note 8.

regulatory system has addressed many of the environmental problems most amenable to regulation, but is not well suited to address the problems that remain.²⁸ This Part briefly surveys major indicators of the state of the environment and identifies the remaining challenges.

A. *Assessments of the Environment*

Surprisingly few assessments of the status and long-term trends of the environment in the United States are available, and those that exist have played a limited role in the debate over the environmental regulatory system.²⁹ The Council on Environmental Quality ("CEQ") is required by NEPA to publish an annual report on the status and trends in the condition of the environment.³⁰ The annual CEQ reports are a valuable source of information, but the CEQ has acknowledged that its reports provide only a limited understanding of the status and trends in the condition of the environment.³¹ For example, in 1992 the CEQ conclud-

²⁸ See, e.g., *Regulating Regulation*, WASH. POST, Jan. 22, 1995, at A18 (maintaining that some regulations "have gone way too far or are monuments to illogic").

²⁹ See, e.g., HAMMOND ET AL., ENVIRONMENTAL INDICATORS, *supra* note 14 (noting that "there are virtually no . . . national experimental indicators to help decision makers or the public evaluate environmental trends or assess the effectiveness of environmental policy"). For example, many of the most recent articles in the popular press rely on anecdotal information about environmental quality and do not reference the Council on Environmental Quality ("CEQ") reports discussed *infra*. See, e.g., Gregg Easterbrook, *Here Comes the Sun*, NEW REPUBLIC, Nov. 11, 1996, at 34 [hereinafter Easterbrook, *Here Comes the Sun*]. Similarly, the trends discussed by the CEQ are rarely mentioned in Congressional floor debates or committee or conference reports.

³⁰ See NEPA § 201, 42 U.S.C. § 4322 (1994). The EPA also publishes annual reports of air and water quality. See *infra* notes 44-45. In addition, several private organizations also publish periodic reports on the state of the environment. See, e.g., CONSERVATION FOUNDATION, STATE OF THE ENVIRONMENT: A VIEW TOWARD THE NINETIES (1987) [hereinafter CONSERVATION FOUNDATION]; WORLD RESOURCES INSTITUTE, THE 1994 INFORMATION PLEASE ENVIRONMENTAL ALMANAC (1994) [hereinafter ENVIRONMENTAL ALMANAC].

³¹ See, e.g., COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY: THE TWENTY-SECOND ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 187 (1992) [hereinafter 1992 ENVIRONMENTAL QUALITY REPORT]. The CEQ assembles much of the current data on the state of the environment from the EPA and other federal agencies. The National Oceanic and Atmospheric Administration, the National Aeronautics and Space Adminis-

ed that “[l]imited data on U.S. water quality conditions preclude assessing an overall national water quality trend.”³² Similarly, the national monitoring system to identify ambient air quality has been described as “surprisingly limited.”³³

In many areas, the problem may be less an absence of data than an absence of meaningful environmental indicators derived from the data. For example, although the environmental legislation of the 1970s and 1980s established extensive data collection efforts for air, water, and toxins, only limited efforts are devoted to assembling, analyzing, and communicating the overall state and trends of the environment.³⁴

tration, the Department of Energy, and the Department of Interior also play a substantial role in collecting and analyzing environmental data, although data collection and analysis efforts have been blocked on occasion. For example, the Department of the Interior’s recent effort to establish a National Biological Survey was opposed by many in Congress. *See Fiscal 1996 R & D Funding Picture Bleak; Could Get Worse, Scientific Group Says*, Daily Env’t Rep. (BNA) A13 (Aug. 30, 1995). Resistance to environmental surveys has a long history in the United States extending back to John Wesley Powell’s expeditions in the 1880s. *See SUSTAINABLE ENVIRONMENTAL LAW: INTEGRATING NATURAL RESOURCE AND POLLUTION ABATEMENT LAW FROM RESOURCES TO RECOVERY 18-19* (Celia Campbell-Mohn et al. eds., 1993) [hereinafter *SUSTAINABLE ENVIRONMENTAL LAW*].

³² 1992 ENVIRONMENTAL QUALITY REPORT, *supra* note 31, at 187. For a general discussion of the status of environmental monitoring, see *id.* at 43-56.

³³ ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE AND POLICY 793 (1992) (citing AIR POLLUTION POLICY IN PUBLIC POLICIES FOR ENVIRONMENTAL PROTECTION 27, 40 (P. Portney ed., 1990)); *see also* U.S. ENVIRONMENTAL PROTECTION AGENCY, NATIONAL AIR POLLUTANT EMISSION ESTIMATES 1940-1990 (1992); U.S. GENERAL ACCOUNTING OFFICE, ENVIRONMENTAL PROTECTION: MEETING PUBLIC EXPECTATIONS WITH LIMITED RESOURCES, REPORT TO CONGRESS (1991); Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1344-45, 1358 (noting that “[w]ithout such an ongoing system of data collection and analysis, there can be little hope of designing regulatory systems which are sensitive to regional ecological and economic realities”); Farber, *supra* note 8, at 1293 (describing the state of monitoring as “strikingly inadequate”).

³⁴ With the exception of CEQ, no agency or department in the federal government is responsible for what is arguably one of the federal government’s most important functions: assessing the current state and long-term trends of the environment. In the recent years, the EPA has focused greater attention on long-term environmental trends. *See, e.g.*, U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF POLICY PLANNING AND EVALUATION, PROPOSED ENVIRON-

Analyses of long-term trends toward sustainability, or any other long-term environmental objective, are particularly hard to find. The absence of analyses is both a symptom and a cause of the limited role of environmental objectives in the command and control regulatory system. The system rarely requires the development of such analyses or performance indicators, and their absence discourages reform.³⁵

B. The State of the Environment

1. *First Generation Problems*

Despite the absence of comprehensive analyses of environmental trends, substantial progress unquestionably has been made on a number of the most obvious problems identified in the 1960s and 1970s.³⁶ With notable exceptions (e.g., automobile emissions), many of these "first generation" problems arose from large, point-source emissions, such as air and water emissions from factories and effluent from publicly-owned

MENTAL GOALS FOR AMERICA WITH BENCHMARKS FOR THE YEAR 2005 (Feb. 1995) (Draft Summary); *Agency Outlines 13 Goals for Achieving Clean Environment, Pollution Prevention*, 25 Env't Rep. (BNA) 2036 (Feb. 24, 1995).

³⁵ See, e.g., Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1347 (noting that the command and control system has not encouraged environmental agencies to compile accurate data on total allowable emissions). In many cases, the means of determining compliance (e.g., the number of fines collected and other enforcement activity counts) have developed but the means of assessing progress toward a desired state of the environment (e.g., environmental conditions) have not. For example, the success of the EPA's environmental enforcement program is evaluated less by its impact on the state of the environment than by its activity counts, such as the number of cases filed and the value of penalties assessed. See Michael M. Stahl, *Enforcement in Transition*, ENVTL. F., Nov./Dec. 1995, at 19, 19-20. These activity counts are commonly referred to within the EPA as enforcement "beans." See *infra* note 390 and accompanying text. This bean counting as a performance measure inevitably creates incentives for greater activity, but makes it difficult for managers to defend actions that may produce greater environmental benefits but fewer activity counts. In recent years, the EPA has begun to develop new enforcement performance measures. See, e.g., *Herman Memo Details Strategy for Developing New Performance Measures*, 26 Env't Rep. (BNA) A-7 (Dec. 20, 1996).

³⁶ The idea that many of the worst environmental problems have been addressed also has been the subject of attention in the popular press. See, e.g., *Attack on Clean Air, Water Laws Crashes into the Facts*, USA TODAY, Nov. 9, 1995, at A12; Easterbrook, *Here Comes the Sun*, *supra* note 29.

wastewater treatment works.³⁷ Assessments of water quality commonly note that rivers no longer catch on fire,³⁸ and more scientific indicators of water quality demonstrate that reductions in emissions from point sources have led to improvements in several water quality indicators.³⁹ For example, in 1990, seventy percent of all rivers met water quality standards and sixty percent of all lakes met water quality standards, up from approximately one-third in 1972.⁴⁰ Rivers demonstrating significant improvements include the Hudson, the Potomac, and parts of the Mississippi.⁴¹ In the Great Lakes, levels of organics such as PCBs and DDT have declined sharply.⁴²

Air quality in many areas also has improved substantially. Many cities are in compliance with the National Ambient Air Quality Standards ("NAAQS")⁴³ for the six Clean Air Act criteria pollutants. With several notable exceptions, both ambient levels⁴⁴ and emis-

³⁷ See 1992 ENVIRONMENTAL QUALITY REPORT, *supra* note 31, at 187 (noting the conclusion of United States Geological Survey studies that point source reductions account for water quality improvements). For example, Clean Water Act § 502(14) defines a point source to be "any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged." 33 U.S.C. § 1362(14) (1994).

³⁸ The Cuyahoga River near Cleveland, Ohio, made national news when it caught on fire in 1969. For a discussion of the Cuyahoga River fire, see David R. Hodas, *Enforcement of Environmental Law in a Triangular Federal System: Can Three Not Be a Crowd When Enforcement Authority Is Shared by the United States, the States, and Their Citizens?*, 54 MD. L. REV. 1552, 1554 n.7 (1995). The absence of rivers burning as a symbol of environmental progress has been mentioned in numerous sources. See, e.g., Cass R. Sunstein, *Administrative Substance*, 1991 DUKE L.J. 607, 623-24 [hereinafter Sunstein, *Administrative Substance*].

³⁹ See, e.g., 1992 ENVIRONMENTAL QUALITY REPORT, *supra* note 31, at 187 (reductions were recorded for "dissolved oxygen deficits, fecal bacteria, and phosphorous, all of which are attributable to improved wastewater treatment").

⁴⁰ See *id.*

⁴¹ See CONSERVATION FOUNDATION, *supra* note 30.

⁴² See 1992 ENVIRONMENTAL QUALITY REPORT, *supra* note 31, at 263-65.

⁴³ See Clean Air Act § 109, 42 U.S.C. § 7409 (1994) (directing the EPA Administrator to set national ambient air quality standards for air pollutants that endanger public health or welfare). The EPA set a NAAQS for a seventh pollutant, hydrocarbons, but rescinded the standard in 1982 after determining that no standard was necessary.

⁴⁴ Between 1975 and 1989, reductions in national ambient levels occurred for each of the six criteria pollutants: (1) sulfur dioxide (an acid rain precursor)

sions⁴⁵ of these major air pollutants in the United States have decreased substantially since 1970.⁴⁶ Between 1970 and 1994, the combined emissions of the six criteria pollutants decreased twenty-four percent.⁴⁷ In addition, air toxics releases are expected to decline as much as eighty percent as a result of the combined impact of the 1990 Clean Air Act

decreased 46%; (2) carbon monoxide (a component of smog) decreased 47%; (3) particulates (lung irritants) decreased 20%; (4) nitrogen dioxide (an acid rain and smog precursor and a greenhouse gas) decreased 17%; (5) ozone (a component of smog) decreased 14%; and (6) lead decreased 93%. See COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY: THE TWENTIETH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY (1990) [hereinafter 1990 ENVIRONMENTAL QUALITY REPORT]. This trend has continued for the period from 1985 through 1994. Reductions in national ambient levels during this period were as follows: (1) sulfur dioxide decreased 25%; (2) carbon monoxide decreased 28%; (3) particulates decreased 20%; (4) nitrogen dioxide decreased 9%; (5) ozone decreased 12%; and (6) lead decreased 86%. See U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF AIR QUALITY PLANNING AND STANDARDS, AIR QUALITY TRENDS 5-10 (1995) [hereinafter EPA, 1995 AIR QUALITY TRENDS].

⁴⁵ For each pollutant, the decreases in ambient concentrations were accompanied by emissions decreases: (1) sulfur dioxide emissions decreased from over 30 million tons in 1970 to approximately 20 million tons in 1990; (2) carbon monoxide emissions decreased from over 120 million tons in 1970 to approximately 60 million tons in 1990; (3) particulates decreased from almost 25 million tons in 1970 to approximately 7 million tons in 1990; (4) oxides of nitrogen ("NO_x") emissions levels increased from over 20 million tons in 1970 to almost 25 million tons in 1980, and then dropped to just under 20 million tons in 1990; (5) emissions of volatile organic compounds ("VOCs"), which are ozone precursors, decreased from over 30 million tons in 1970 to under 20 million tons in 1990; and (6) lead emissions decreased from over 200 thousand tons in 1970 to several thousand tons in 1990). See U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF AIR QUALITY PROGRAMS, NATIONAL AMBIENT AIR QUALITY EMISSION AND TRENDS REPORT (1995); ENVIRONMENTAL ALMANAC, *supra* note 30, at 108-10; see also U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF AIR QUALITY PLANNING AND STANDARDS, NATIONAL AIR POLLUTANT ESTIMATES 2 (1990) [hereinafter EPA, NATIONAL AIR POLLUTANT ESTIMATES].

⁴⁶ See EPA, NATIONAL AIR POLLUTANT ESTIMATES, *supra* note 45; see also CONSERVATION FOUNDATION, *supra* note 30, at 152-53 (indicating that air emissions from transportation sources have been reduced from 122.6 million metric tons in 1975 to 3.5 million in 1986).

⁴⁷ EPA, 1995 AIR QUALITY TRENDS, *supra* note 44, at 4.

Amendments⁴⁸ and new federal reporting requirements under the Environmental Planning and Community Right to Know Act of 1986 ("EPCRA").⁴⁹ These improvements are all the more remarkable because from 1970 to 1994 the population of the United States increased twenty-seven percent and the gross domestic product increased ninety percent.⁵⁰

Similarly, human and environmental exposures to many pesticides and toxics have been reduced. For example, the extinction of the bald eagle from exposure to DDT and other threats no longer appears imminent.⁵¹ Blood lead levels in children have declined markedly.⁵² The treatment, storage, and disposal of hazardous wastes have improved since the enactment of the Resource Conservation and Recovery Act ("RCRA")⁵³ in 1976 and the Comprehensive Environmental Response, Cleanup, and Liability Act ("CERCLA" or "Superfund")⁵⁴ in 1980. Notwithstanding criticisms about the slow pace and high cost of remediating existing Superfund sites, prompt removal actions have occurred at thousands of sites and long-term contamination problems have been mitigated at several hundred sites.⁵⁵

⁴⁸ Pub. L. No. 101-549, 104 Stat. 2468 (codified as amended at 42 U.S.C. §§ 9601-9675 (1994)). According to a November 1995 EPA report, the number of cities failing to meet ozone standards decreased 50% from 1990 to 1995, and decreased 63% for carbon monoxide during the same period. EPA, 1995 AIR QUALITY TRENDS, *supra* note 44, at 5, 8.

⁴⁹ Pub. L. No. 99-499, tit. III, 100 Stat. 1728 (1986) (codified at 42 U.S.C. §§ 11001-11050 (1994)); *see* ENVIRONMENTAL ALMANAC, *supra* note 30, at 112-16.

⁵⁰ *See* EPA, 1995 AIR QUALITY TRENDS, *supra* note 44, at 4.

⁵¹ *See, e.g.*, U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF POLICY, PLANNING AND EVALUATION, ENVIRONMENTAL FUTURES (1995); *see also* Reclassify the Bald Eagle from Endangered to Threatened in Most of the Lower 48 States, 59 Fed. Reg. 35,584, 35,585 (1994).

⁵² *See* Jerry L. Anderson, *The Environmental Revolution at Twenty-Five*, 26 RUTGERS L.J. 395, 403 (1995). This was achieved both through reductions in airborne (e.g., leaded gasoline) and non-airborne (e.g., leaded paint) toxics.

⁵³ Pub. L. No. 94-580, 90 Stat. 2796 (1976) (codified as amended at 42 U.S.C. §§ 6907-6987 (1994)).

⁵⁴ Pub. L. No. 96-510, 94 Stat. 2767 (1980) (codified as amended at 42 U.S.C. §§ 9601-9675 (1994)).

⁵⁵ As of October 1996, more than 3800 removal actions had been completed, and more than 400 sites had reached the "construction complete" stage (out of approximately 1300 sites on the National Priorities List). U.S. Environmental Protection Agency, *Superfund Administrative Reforms Annual Report Fiscal Year 1996* (visited Mar. 27, 1997) <<http://www.epa.gov/superfund/oerr/admin/>

2. *Second Generation Problems*

Despite the successes in addressing first generation problems, numerous studies suggest that the remaining problems are particularly difficult to address.⁵⁶ One recent study, after interviewing environmental experts and reviewing several rankings of remaining environmental problems, identified the following as the most important (in no particular order):

- runoff of polluted water from farmlands, developed urban areas, construction sites, and other scattered “non-point” locations;
- high levels of ground-level ozone and other air pollutants in many American cities;
- the potential long-term alteration of the global climate and the depletion of stratospheric ozone;
- the wide-scale destruction of critical habitats and the resulting threats to biodiversity;
- degradation of America’s coastal zones and estuaries caused by the combination of habitat destruction, non-point water pollution, erosion and siltation, and overfishing;
- indoor air pollution and lead paint;
- the exposure of workers to pesticides and other chemical hazards;
- the accidental introduction of non-native species into ecosystems, such as the zebra mussel into the Great Lakes; and
- the contamination of drinking water supplies by organisms such as cryptosporidium.⁵⁷

This list is not definitive, but it includes many of the remaining second generation threats to the environment. These second generation problems have at least two distinguishing characteristics: (1) they arise from multiple, diffuse sources or increased activity levels (as opposed to traditional point sources); and (2) they often involve long-term impacts that are broadly dispersed across regions or the globe (as opposed to short-term, largely localized events). As discussed in Part II, these characteristics make second generation problems more difficult to address

[exocsum.htm#superfundtoday](#)>.

⁵⁶ See, e.g., ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, ENVIRONMENTAL PERFORMANCE REVIEWS: UNITED STATES 78-79 (1996) [hereinafter OECD, UNITED STATES PERFORMANCE REVIEW].

⁵⁷ NATIONAL ACADEMY OF PUBLIC ADMINISTRATION, SETTING PRIORITIES, GETTING RESULTS: A NEW DIRECTION FOR EPA 12-13 (1995) (Summary Report) [hereinafter NAPA REPORT].

through traditional command and control regulations than many of the first generation problems.

a. Diffuse Sources and Increased Activity Levels

Many of the remaining air and water problems arise from numerous, diffuse sources, such as farm and urban runoff, and from increased individual activity levels, such as increased vehicle miles travelled per automobile and increased solid waste production per household. Examples of multiple, diffuse sources abound in the water and air pollution areas.

Studies conducted by the United States Geological Survey indicate that although water pollutant loadings from point sources decreased between the mid-1970s and mid-1980s, increases were recorded for nitrogen, chloride, and dissolved solids, all of which are predominately emitted by non-point sources.⁵⁸ According to the CEQ, approximately 165,000 miles of rivers and 8.1 million acres of lakes have some level of non-point pollution.⁵⁹ In 1992, the CEQ identified runoff as a leading source of emissions to water bodies.⁶⁰ The CEQ also concluded that the primary remaining threat to drinking water in the United States is from non-point source contaminants, including lead and certain parasites,⁶¹ such as the cryptosporidium that contaminated drinking water in Milwaukee, Wisconsin, in 1993.⁶² A 1995 EPA report identified agricultural and urban run-off as two key sources of water quality impairment.⁶³

Similarly, a substantial percentage of the remaining air pollution problems are caused primarily by multiple, diffuse sources. For example, problems from low-level ozone, better known as smog, are caused in part

⁵⁸ See 1992 ENVIRONMENTAL QUALITY REPORT, *supra* note 31, at 187 (nitrogen and dissolved solids are common products of runoff from farm fertilizers and erosion, and chloride is a common constituent of runoff from streets that have been salted to prevent icing).

⁵⁹ See *id.* at 188-89.

⁶⁰ See *id.*

⁶¹ See *id.* at 190.

⁶² See NAPA REPORT, *supra* note 57, at 13.

⁶³ See U.S. ENVIRONMENTAL PROTECTION AGENCY, WATER QUALITY INVENTORY (1995) (indicating that 1994 data demonstrate that 40% of assessed water bodies do not meet the "swimmable and fishable" criteria, and that agricultural runoff accounts for 60% of impaired rivers and 50% of impaired lakes).

by the emissions of volatile organic compounds ("VOCs").⁶⁴ Ozone is thought to contribute to asthma,⁶⁵ and since 1970 the hospitalization rate for asthma has tripled in the United States.⁶⁶ Although emitted from large factories, these VOCs also are emitted by numerous, diffuse sources, ranging from gasoline stations to dry cleaners, motor vehicles, air fresheners, hairsprays, and home cleaning products.⁶⁷ Indoor air pollution also arises from numerous sources in the home or workplace.

A number of problems arise because the amount of environmentally significant activity per person and the total number of people are offsetting the efforts to reduce the activity's impact on the environment. Perhaps the best example of these activity level problems is the impact of increased automobile vehicle miles travelled on air pollution. In the past twenty-five years, enormous emission reductions per mile travelled have been achieved for automobiles.⁶⁸ Yet the total number of automobiles has increased, as has the number of miles travelled per automobile. The total number of vehicles in the United States increased from 89.2 million in 1970 to 139 million in 1989, a 56% increase.⁶⁹ The total vehicle miles travelled in the United States increased 111% between 1970 and 1994, from 1.11 trillion miles in 1970 to 2.35 trillion miles in 1994.⁷⁰ The combination of more vehicles and more miles travelled per vehicle has undercut part of the gains from increasingly stringent pollution controls on new motor vehicles.⁷¹

The impact of these multiple, diffuse source and activity level problems is significant. Although diffuse sources and increased activity levels do not account for all emissions, they account for a substantial percentage, in many cases fifty to eighty percent or more of the

⁶⁴ See EPA, 1995 AIR QUALITY TRENDS, *supra* note 44, at 7-8 (noting that the other key component of ozone is NO_x).

⁶⁵ See *id.* at 8.

⁶⁶ See PERCIVAL ET AL., *supra* note 33, at 777.

⁶⁷ See, e.g., *Upcoming Proposal Has VOC Content Limits for 24 Types of U.S.-Manufactured Products*, Daily Env't Rep. (BNA) AA-1 (Oct. 27, 1995).

⁶⁸ Estimates of total emission reductions per vehicle are hotly disputed, but range from 75% to 96% per mile travelled. See, e.g., Jayne O'Donnell, *EPA: Tests Undercount Auto Pollution*, USA TODAY, Dec. 11, 1995, at A1.

⁶⁹ See 1990 ENVIRONMENTAL QUALITY REPORT, *supra* note 44, at 9.

⁷⁰ See EPA, 1995 AIR QUALITY TRENDS, *supra* note 44, at 4.

⁷¹ This phenomenon is not limited to the United States. According to one estimate, the number of automobiles in the world is expected to double to one billion by the year 2030. See ENVIRONMENTAL ALMANAC, *supra* note 30, at 110.

remaining problems.⁷² As a result, major air emissions problems remain.⁷³ As of 1991, at least eighty-six million people still lived in an area in which at least one NAAQS standard was not met. Areas in violation, or "nonattainment," included twenty-nine cities that did not meet carbon monoxide standards, and fifty-six cities that did not meet ozone standards.⁷⁴ Improvements in these areas are occurring because of the Clean Air Act Amendments of 1990.⁷⁵

The solid waste generation and disposal picture also is affected by the diffuse source and activity level problems.⁷⁶ Solid waste generation increased on a per-person basis from 2.7 pounds per day in 1960, to 4 pounds in 1988, to 4.3 pounds in 1990.⁷⁷ Combined with population

⁷² A 1984 EPA report indicated that non-point sources contributed well over half of the nitrogen, biochemical oxygen demand, phosphorous, oil, and lead pollution in water. See U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF WATER PROGRAM OPERATIONS, REPORT TO CONGRESS: NONPOINT SOURCE POLLUTION IN THE UNITED STATES 1-14 (1984). Similarly, a 1990 report concluded that major point sources contributed only 20% of hazardous air pollutants. See H.R. REP. NO. 101-490, at 318 (1990). But see Oliver A. Houck, *The Regulation of Toxic Pollutants Under the Clean Water Act*, 21 *Envtl. L. Rep. (Envtl. L. Inst.)* 10,528, 10,543 (Sept. 1991) [hereinafter Houck, *The Regulation of Toxic Pollutants*].

⁷³ For example, major sources in the 12 northeastern states contributed only 16% of the ozone precursors in that area in 1990. See Richard E. Ayers, *Developing a Market in Emissions Credits Incrementally: An "Open Market" Paradigm for Market-Based Pollution Control*, 25 *Env't. Rep. (BNA)* 1522, 1528-29 (Dec. 2, 1994).

⁷⁴ See U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF AIR QUALITY PLANNING AND STANDARDS, NATIONAL AIR QUALITY EMISSIONS & TRENDS REPORT 1993 (1994); see also CONSERVATION FOUNDATION, *supra* note 30, at 152-53 (indicating that air emissions from transportation sources have been reduced from 122.6 million metric tons in 1975 to 3.5 million in 1986).

⁷⁵ See, e.g., EPA, 1995 AIR QUALITY TRENDS, *supra* note 44, at 5-10 (indicating that ambient levels of carbon monoxide, ozone, and sulfur dioxide decreased in 1993-1994).

⁷⁶ In recent years, significant concern has developed over the concentration of solid and hazardous waste disposal sites and toxics emissions in low income and minority areas. Issues concerning the distribution of risks, both within the United States and between nations, have grown in importance. See *infra* note 185.

⁷⁷ See 1992 ENVIRONMENTAL QUALITY REPORT, *supra* note 31, at 335; see also OECD, UNITED STATES PERFORMANCE REVIEW, *supra* note 56, at 241 (noting that the United States has the highest per capita generation of solid waste

increases, these increased waste generation rates have contributed to national waste generation totals that have risen from under 100 million tons in 1960, to 150 million tons in 1980, to a figure approaching 200 million tons in 1990.⁷⁸

Diffuse source and activity levels also have increased the volume of farm chemicals used. According to the CEQ, fertilizer use in the United States has tripled since 1960 to twenty million tons per year.⁷⁹ Herbicide and pesticide use has increased by almost sixty-four percent since 1964, to a total of 239,000 tons in 1991.⁸⁰ The impact of this usage on the environment is hotly debated. In 1988, the EPA reported that twenty-six states had detectable amounts of forty-six different agricultural chemicals in their ground water. Similarly, tests of many food supplies have detected pesticide residues at low levels.⁸¹

In addition, the contaminants in one medium often affect other media, even at considerable distances. For example, air emissions are thought to contribute close to one-third of the total oceanic pollution.⁸² A substantial proportion of the nutrient and toxic pollutant loading of the Great Lakes and the Chesapeake Bay occurs from air deposition of nitrogen oxides ("NO_x") and other substances.⁸³

in the OECD). In addition, more than 306 million tons of regulated *hazardous* waste were generated in 1991. See U.S. ENVIRONMENTAL PROTECTION AGENCY, BIENNIAL RCRA HAZARDOUS WASTE REPORT (1993).

⁷⁸ See ENVIRONMENTAL ALMANAC, *supra* note 30, at 90 (citing U.S. ENVIRONMENTAL PROTECTION AGENCY, CHARACTERIZATION OF MUNICIPAL SOLID WASTES IN THE UNITED STATES: 1990 UPDATE, tbl. 1, at 10 (1990)).

⁷⁹ See 1992 ENVIRONMENTAL QUALITY REPORT, *supra* note 31, at 297.

⁸⁰ See *id.* at 187; see also John W. Mill, *Agricultural Chemical Contamination of Groundwater: An Economic Analysis of Alternative Liability Rules*, 1991 U. ILL. L. REV. 1135, 1136 (noting that between 1964 and 1987 the number of acres treated with pesticides tripled).

⁸¹ See 1992 ENVIRONMENTAL QUALITY REPORT, *supra* note 31, at 187. Substantial disagreement exists over the environmental and human health effects of the chemicals at the levels detected in the environment. In the last several years, studies have been initiated to evaluate the potential estrogenic effects of certain compounds at low levels. See, e.g., Food Quality Protection Act of 1996 § 405(p)(1), Pub. L. No. 104-170 (establishing endocrine disrupter substances screening program).

⁸² See ENVIRONMENTAL ALMANAC, *supra* note 30, at 321 (citing *United Nations Environment Programme, Reports and Studies No. 39: The State of the Marine Environment* 88 (1990)).

⁸³ See EPA, 1995 AIR QUALITY TRENDS, *supra* note 44, at 7; see also *Environmental Groups Sue EPA to Enforce Air Act Provisions Protecting Great*

b. Long-Term, Global Impacts

The additional category of second generation problems arises from the increased emissions and use of resources by expanding populations. These problems — such as resource depletion, ozone depletion due to chlorofluorocarbons, and climate changes due to carbon dioxide and related air emissions — are often regional or global in scope, affecting local or regional ecosystems such as the Chesapeake Bay, or even larger global systems such as the stratospheric ozone layer. These complex problems often involve uncertain and evolving scientific understanding. For example, the concern surrounding ozone depletion and global climate change derives from scientific information developed only during the last few decades.

Also causing long-term, global impacts are the wide range of resource depletion problems, such as soil erosion, “mining” of ground water, and deforestation. For example, the Ogallala aquifer in the Midwest is experiencing substantial declines in water levels.⁸⁴ Many major fisheries are at historic lows and a number have been closed.⁸⁵ The depletion of remaining tropical forest resources also is a focus of concern.

3. *Summary*

Without question, a number of indicators demonstrate substantial environmental progress during the past twenty-five years. These improvements have occurred despite growth in population and gross domestic product. Assessing the extent of the remaining first generation and the emerging second generation problems is much more difficult. Are the remaining problems short-term concerns that are likely to be solved through the current regulatory system, technological innovation, or cultural evolution? Or are they fundamental threats to sustaining a vibrant, modern society that are not addressed by the current regulatory system?

Waters, Daily Env't Rep. (BNA) A-4, A-5 (July 19, 1996) (noting assertions that air pollution may be responsible for large percentages of certain Great Lakes contaminants); Todd Shields, *Scientist Tracks Bay Pollution Back to Stacks in the Midwest*, WASH. POST, Apr. 30, 1996, at B1 (concluding that 20% to 35% of the total nitrogen in the Chesapeake Bay may arise from air pollution).

⁸⁴ See ENVIRONMENTAL ALMANAC, *supra* note 30, at 170-73.

⁸⁵ See *id.*

Neither the CEQ nor any other federal or state agency is responsible for assessing these issues in depth on a national or global level. As a result, except for anecdotal analyses and limited data on trends in certain media, the environmental debate in the United States is conducted, and the environmental regulatory system functions, in the absence of systematic, comprehensive analyses of the long-term capacity of the environment to sustain human life and environmental quality.

II. THE COMMAND AND CONTROL SYSTEM

Just as the most pressing environmental problems have evolved over time, so has the environmental regulatory system designed to address them. Not surprisingly, the evolution of the environmental regulatory system has been neither methodical nor rational, nor has it always reflected the changes in the underlying problems it seeks to address. The early events that shaped the environmental regulatory system are particularly important to any evaluation of environmental law reform because those events have imparted a legacy of conventional wisdom that has shaped the current debate. This conventional wisdom appears in the form of prevailing, if not always accurate, views about the lessons to be learned from the early experiences with environmental regulation and the choices faced by reform efforts.

A. *Development of the Command and Control System*

1. *The Early Experience*

A logical approach to environmental protection in the United States might have been to identify a desired state of the environment, identify the ambient conditions that comprise that state, and then craft strategies to achieve those ambient conditions. On the surface, much of environmental law appears to have developed in that way. NEPA, the first modern environmental statute, articulated a high-minded goal⁸⁶ that

⁸⁶ Section 101(a) of NEPA makes it the policy of the United States to “use all practicable means and measures . . . in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans.” NEPA § 101(a), 42 U.S.C. § 4331(a) (1994). Section 101(b) then sets forth objectives (the “practicable means”) for environmental policy:

remains remarkably current when compared to the goal of “sustainable development” that is now in fashion internationally.⁸⁷ Within a decade

In order to carry out the policy set forth in this Chapter, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may —

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Id. § 4331(b). Section 101(c) provides as follows: “The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.” *Id.* § 4331(c).

⁸⁷ See, e.g., U.N. GAOR PREPARATORY COMM. FOR U.N. CONFERENCE ON ENVIRONMENT AND DEVELOPMENT, OVERVIEW OF AGENDA 21 AND IMPLEMENTATION MECHANISMS: REPORT OF THE SECRETARY-GENERAL OF THE CONFERENCE, 4th Plen. Sess., U.N. Doc. A/Conf. 151/PC/100/Add.1 (1992) [hereinafter AGENDA 21]. Compare NEPA's directive to “use all practicable means and measures . . . in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans,” NEPA § 101(a), 42 U.S.C. § 4331(a) (1994), with the articulation of sustainable development in *Our Common Future*, the final report of the World Commission on Environment and Development: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” UNITED NATIONS, WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, OUR COMMON FUTURE (1987) [hereinafter UNITED NATIONS, OUR COMMON FUTURE]. For a discussion of sustainable development on an international level, see, for example, Edith Brown Weiss, *Environmentally Sustainable*

after NEPA, Congress enacted a plethora of statutes presumably designed to implement the NEPA goal.⁸⁸

The reality of the development of environmental law is much less satisfying.⁸⁹ The strong public demand for environmental protection coupled with concern by industry and local governments about the economic costs of pollution control have been the subject of substantial legal scholarship and remain important today.⁹⁰ In seeking to address

Competitiveness: A Comment, 102 YALE L.J. 2123 (1993); see also Jeffrey L. Dunoff, *From Green to Global: Toward the Transformation of International Environmental Law*, 19 HARV. ENVTL. L. REV. 241 (1995).

⁸⁸ See, e.g., Federal Water Pollution Control Act, Pub. L. No. 92-500, 86 Stat. 816 (1972) (codified as amended at 33 U.S.C. §§ 1251-1387 (1994)); Clean Air Act, Pub. L. No. 91-604, 84 Stat. 1705 (1970) (codified as amended at 42 U.S.C. §§ 7401-7642 (1994)); Toxic Substances Control Act, Pub. L. No. 94-469, 90 Stat. 2003 (1976) (codified as amended at 15 U.S.C. §§ 2601-2692 (1994)); Federal Insecticide, Fungicide, and Rodenticide Act, Pub. L. No. 92-512, 86 Stat. 973 (1972) (codified as amended at 7 U.S.C. §§ 136-136y (1994)); Resource Conservation & Recovery Act of 1976, Pub. L. No. 94-580, 90 Stat. 2795 (codified as amended at 42 U.S.C. §§ 6901-6987 (1994)); Comprehensive Environmental Response Compensation & Liability Act, Pub. L. No. 96-510, 94 Stat. 2767 (1980) (codified as amended at 42 U.S.C. §§ 9601-9675 (1994)); Safe Drinking Water Act, Pub. L. No. 93-523, 88 Stat. 1660 (1974) (codified as amended at 42 U.S.C. §§ 300g-1 to 300j-26 (1994)); Oil Pollution Act of 1990, 33 U.S.C. §§ 2701-2761 (1994); National Forest Management Act of 1976, 16 U.S.C. § 1604(c) (1994); Federal Land Policy & Management Act of 1976, 30 U.S.C. §§ 1201-1328 (1994); Endangered Species Act, 16 U.S.C. §§ 1531-1544 (1994); Marine Mammal Protection Act of 1972, 16 U.S.C. §§ 1361-1421h (1994); Emergency Planning & Community Right-to-Know Act of 1986, 42 U.S.C. §§ 11001-11050 (1994).

⁸⁹ NEPA was designed to induce the federal government to "approach environmental management in a comprehensive way," yet through its implementation by the executive and interpretation by the courts it has become a procedural requirement to ensure that environmental and other values are included in specific federal agency decisions. For a discussion of the implementation of NEPA, see, for example, Philip Michael Ferrester, *Revitalizing the National Environmental Policy Act: Substantive Law Adaptations from NEPA's Progeny*, 16 HARV. ENVTL. L. REV. 207 (1992).

⁹⁰ The public support for environmental protection in the late 1960s and early 1970s, and the importance of environmental issues to then-presidential candidates Nixon and Muskie, have been widely discussed. See, e.g., FREDERICK R. ANDERSON ET AL., ENVIRONMENTAL PROTECTION: LAW AND POLICY at xxiv (1984) (noting that "environmental quality suddenly became a popular political issue in the late 1960s"); PERCIVAL ET AL., *supra* note 33, at 764 (discussing the

those conflicting pressures, policymakers in the 1960s lacked experience with the available regulatory and policy options. The attempts to develop a comprehensive environmental regulatory system in the United States were among the first of any nation, thus experiences from abroad were of little use. Few models existed for negotiated rulemakings or non-command and control options such as market trading and voluntary incentive programs.

The available experiences were based on an adversarial model. The civil rights movement, which served as a launching pad for much of the early environmental movement,⁹¹ and the experience with New Deal regulatory systems,⁹² offered a history of broad delegations to executive agencies combined with reliance on federal court litigation to provide accountability. Citizen suit provisions and challenges to notice and comment rulemaking became common features of environmental statutes.⁹³ Federal financial and agency resources devoted to establishing

“politician’s dilemma” that faced Nixon and Muskie). Industry and local government opposition to the costs of pollution control, including the fact that President Nixon vetoed the Federal Water Pollution Control Act on fiscal grounds, also have been widely discussed. *See, e.g.*, E. Donald Elliott et al., *Toward a Theory of Statutory Evolution: The Federalization of Environmental Law*, 1 J.L. ECON. & ORG. 313 (1985); *see also* PERCIVAL ET AL., *supra* note 33, at 764. Many authors have noted that Congress had strong incentives to enact statutes with ambitious goals to satisfy strong citizen support for environmental protection, but, in the face of industry concerns about costs, had little incentive to make many of the hard trade-offs required to achieve the goals. *See, e.g.*, Schoenbrod, *supra* note 17, at 744-47; *see also* Cass R. Sunstein, *Endogenous Preferences, Environmental Law*, 22 J. LEGAL STUD. 217 (1993) [hereinafter Sunstein, *Endogenous Preferences*].

⁹¹ *See* SUSTAINABLE ENVIRONMENTAL LAW, *supra* note 31, § 1.2; *see also* ANDERSON ET AL., *supra* note 90, at 6 (noting that “a major catalyst for the birth of the environmental movement was the transfer of political energy from the bitterly controversial and often violent civil rights and anti-Vietnam War movements”); Stewart, *Madison’s Nightmare*, *supra* note 19, at 339 (noting that “the successes of the civil rights movement were emulated by advocates for the poor and for consumer and environmental interests”).

⁹² For discussions of the impact of New Deal thinking on the development of command and control regulatory systems, *see, for example*, ACKERMAN & HASSLER, *supra* note 11, at 8-9; Christopher Edley, Jr., *The Governance Crisis, Legal Theory, and Political Ideology*, 1991 DUKE L.J. 561, 579-86; Sunstein, *Democratizing America*, *supra* note 26, at 951-54.

⁹³ *See, e.g.*, 42 U.S.C. § 7604 (1994) (Clean Air Act citizen suit provision); *see also* Plater, *supra* note 8, at 1007 (noting that “[c]itizen litigation shaped

an agenda for environmental protection also were limited. In fact, the EPA was not created until 1970 and has never been given a statutory mission.⁹⁴

Most importantly, two components of the experience in the 1960s and early 1970s have produced a legacy that has blocked environmental law reform in recent years: (1) scientific uncertainty about the relationship between emissions and ambient environmental and human health problems that existed during that period; and (2) concerns about the failed attempts of states in the 1960s to adopt and enforce ambient environmental standards.

*a. The First Lesson:
Scientific Uncertainty About Natural
Systems and Ambient Conditions*

In the 1960s and early 1970s, ecology was an extremely young field. Scientific understanding of the complex interactions of the natural environment and of the human health impacts of toxic substances was poor.⁹⁵ Furthermore, modelling of the movement and effect of contaminants was in its infancy.⁹⁶ Since scientific understanding was limited, the broad aspirations of NEPA were never translated on a statutory level into more precisely defined ambient conditions or other characteristics of human health and the environment.⁹⁷ The first modern environmental

most of the modern administrative structure of environmental law every step of the way").

⁹⁴ The EPA was established through an Executive Order assembling the environmental components of numerous federal departments. *See* Reorganization Plan No. 3 of 1970, 35 Fed. Reg. 15,623, 84 Stat. 2086 (codified as amended at 42 U.S.C. § 4321 (1994)).

⁹⁵ *See, e.g.*, U.S. COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY 1975, 497 (1975) (noting that "it is usually impossible to prove beyond doubt that a particular pollutant . . . causes health damage, much less how the damage may vary with exposure").

⁹⁶ *See, e.g.*, *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1043 (D.C. Cir. 1978) (describing the state of knowledge about water pollution problems in the early 1970s as "scientific ignorance").

⁹⁷ For a discussion of the absence of meaningful national goals, see Pedersen, "*Protecting the Environment*," *supra* note 26, at 969, 979 (noting that "the architects of our environmental protection system shrank from any definition of goals that might provoke conflict with powerful established social groups or values"); *see also* NAPA REPORT, *supra* note 57, at 15 (noting that "[a]s NAPA

statutes articulated sweeping, ambitious goals,⁹⁸ but, with the exception of several broad delegations of authority to the EPA, the statutes made only limited attempts to identify desired ambient environmental conditions or to link particular statutory requirements to these environmental conditions.⁹⁹ The statutes made no attempt to assemble these conditions into an integrated set of indicators that might signal achievement of the overall NEPA goals for the environment.¹⁰⁰

began analyzing EPA's budget, priorities, and management systems, it became obvious that making judgments about EPA's performance was difficult because the agency lacked a clear set of benchmarks, a coherent mission describing what the agency was supposed to be doing").

⁹⁸ See, e.g., Federal Water Pollution Control Act, 33 U.S.C. §§ 1251(a)(1), 1288, 1312, 1313 (1994); see also PERCIVAL ET AL., *supra* note 33, at 879 (describing the scope of the Clean Water Act goals as "breathhtakingly ambitious"); Anderson, *supra* note 52, at 399 (describing the Clean Water Act goals as "utopian"); Schoenbrod, *supra* note 17, at 803 n.358 (describing the Clean Air Act regulatory system as "ambient standards, planning on a grand scale, and utopian goals").

⁹⁹ See *infra* text at notes 116-18. See, e.g., 95th Cong., 2d Sess., A LEGISLATIVE HISTORY OF THE CLEAN WATER ACT OF 1977: A CONTINUATION OF THE LEGISLATIVE HISTORY OF THE FEDERAL WATER POLLUTION CONTROL ACT, REPORT ON RESOLUTION PROVIDING FOR CONSIDERATION OF CONFERENCE REPORT ON H.R. 3199, 459 (Comm. Print 1978) (describing the "general concept" of the Clean Water Act as "that ecological protection will more likely be achieved through the elimination of discharge of all pollutants rather than requiring that Government bear the burden of establishing a precise relationship between each pollutant in each effluent stream to a particular receiving water quality impact"). Several individual environmental statutes include media-specific goals and provide for the establishment of certain media-specific environmental standards. For example, the Clean Water Act established goals of fishable, swimmable rivers and zero discharge of pollutants. Federal Water Pollution Control Act § 101(a)(1) & (2), 33 U.S.C. § 1251(a)(1) & (2). Clean Air Act § 110(a) required the attainment of NAAQS for criteria pollutants "as expeditiously as practicable but . . . in no case later than three years from the date of the approval of [a State Implementation Plan]." 42 U.S.C. § 7106(c)(iv). The Endangered Species Act also articulated a general goal to preserve species. See 16 U.S.C. §§ 1531-1544 (1994). These statutes delegated ambient standard-setting to the EPA and did not set a mechanism for integrating or prioritizing among the ambient standards.

¹⁰⁰ This outcome might not have been a foregone conclusion. See, e.g., Ferrester, *supra* note 89. The six objectives of § 101(b) could have been given a substantive, as opposed to purely aspirational, reading. See, e.g., Calvert Cliffs Coord. Comm., Inc. v. Atomic Energy Comm'n, 449 F.2d 1109, 1115 (D.C. Cir.

The lesson that ambient conditions were difficult to identify from a scientific and technical perspective became part of the conventional wisdom of lawmakers, courts, and other environmental policymakers.¹⁰¹ Moreover, when combined with the public pressures for environmental protection and against the costs of achieving it, the scientific and technical difficulties encouraged Congress to delegate identification of desired ambient environmental conditions and other similar environmental objectives (e.g., acceptable human health risks) to executive branch agencies.¹⁰²

*b. The Second Lesson:
The Failure of State Enforcement of
Ambient Standards in the 1950s and 1960s*

In addition to the scientific uncertainty about natural systems, the experience of the 1950s and 1960s counselled against relying on a system that directed the states to adopt and enforce non-prescriptive ambient standards.¹⁰³ As demonstrated in Table 1,¹⁰⁴ Congress did not embrace a strong, intrusive command and control regulatory system until after more than two decades of less intrusive attempts to induce state action failed.¹⁰⁵ Two elements of this pre-1970 experience are closely

1971) (holding that NEPA dictates only that agencies need only consider environmental outcomes; they do not have to act on them). This more substantive approach was advocated by several scholars in the early 1970s, but was rejected by the courts. *See generally* DANIEL R. MANDELKER, *NEPA LAWS AND LITIGATION* §§ 2-9 to 2-10, §§ 10-19 to 10-29 (1994).

¹⁰¹ *See, e.g.,* Marcia R. Gelpe & A. Dan Tarlock, *The Uses of Scientific Information in Environmental Decisionmaking*, 48 S. CAL. L. REV. 371 (1974); Howard Latin, *Ideal Versus Real Regulatory Efficiency: Implementation of Uniform Standards and "Fine-Tuning" Regulatory Reform*, 37 STAN. L. REV. 1267, 1273-74 (1985) (noting in 1985 that "ecology is a relatively new science, and society generally lacks adequate data on long-term environmental conditions and changes").

¹⁰² *See, e.g.,* Schoenbrod, *supra* note 17, at 748.

¹⁰³ *See, e.g.,* *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1062 (D.C. Cir. 1978) (upholding pulp and paper guidelines exclusion of consideration of assimilative capacity of receiving waters in part because of failure of pre-1972 ambient standards' enforceability and states' incentives to relax local limitations).

¹⁰⁴ *See* TABLE 1 *infra* p. 833.

¹⁰⁵ *See, e.g.,* Robert V. Percival, *Environmental Federalism: Historical Roots and Contemporary Models*, 54 MD. L. REV. 1141, 1147 (1995).

intertwined: the use of ambient standards as a regulatory approach and the reliance on states to implement that regulatory approach. The failure of this combination became a central lesson of the early history of environmental law and greatly influenced the development of federal environmental laws enacted in the 1970s and 1980s. The early federal efforts to induce states to address air and water pollution problems best demonstrate this point.

i. Federal Clean Water Laws

The federal clean water efforts began with statutes directed at research and grants in 1948¹⁰⁶ and 1956.¹⁰⁷ These efforts were followed in 1965 by a requirement that states set ambient water quality standards.¹⁰⁸ But states were slow to develop ambient standards.¹⁰⁹ Perhaps more importantly, the difficulty of demonstrating the impact of emissions from a particular source on the ambient conditions of the receiving water discouraged state enforcement of those few standards that were developed.¹¹⁰ In the face of mounting environmental concerns,

¹⁰⁶ See Federal Water Pollution Control Act of 1948, Ch. 758, 62 Stat. 1155.

¹⁰⁷ See Federal Water Quality Standards Act of 1956, Pub. L. 84-660, 70 Stat. 498.

¹⁰⁸ See Water Quality Act of 1965, Pub. L. No. 89-234, 79 Stat. 903. The standards were intended to function as a measure of performance of allowable pollution levels and an avenue for enforcement. See S. REP. NO. 92-414, at 4 (1971). This ambient standards approach led to the complex mix of ambient standards to be achieved through permits and technology standards of the 1972 Federal Water Pollution Control Act.

¹⁰⁹ By 1972, only half of the states had adopted the water quality standards required by the 1965 Water Quality Act. See PERCIVAL ET AL., *supra* note 33, at 874.

¹¹⁰ See, e.g., ANDERSON ET AL., *supra* note 90, at 364-65 ("states dragged their feet in submitting standards and enforcement was nil"); Frank J. Barry, *The Evolution of the Enforcement Provisions of the Federal Water Pollution Control Act: A Study of the Difficulty in Developing Effective Legislation*, 68 MICH. L. REV. 1103, 1105-07 (1970) (Prior to 1971, the Federal Water Pollution Control Act requirements that allowed states to set ambient water standards based on the intended use of the water proved unenforceable because the government had to demonstrate that a particular effluent caused the violation of the ambient standards.); see also S. REP. NO. 92-414, at 18 (1971) (noting the imprecision of models for water quality and the effects of effluents in most waters). The difficulty of demonstrating a nexus between a particular emission and ambient

state inaction reinforced the need for easily enforceable, prescriptive federal requirements. Thus, only after these early non-prescriptive, ambient standards-based approaches failed to produce significant improvements in water quality did Congress enact the Federal Water Pollution Control Act of 1972 (commonly referred to as the Clean Water Act).¹¹¹

ii. Federal Clean Air Laws

Federal clean air efforts progressed on a similar track.¹¹² As with the early clean water statutes, the federal clean air statutes began in 1955¹¹³ and 1960¹¹⁴ with laws directed only at research and technical assistance. The federal clean air efforts then evolved into the establishment of federal ambient standards in 1963.¹¹⁵ In 1967, Congress required states to adopt ambient standards.¹¹⁶ Only after these attempts failed to produce significant improvements in air quality did Congress establish a federally enforceable command and control regulatory system through the 1970 Clean Air Act. Thus, like the 1972 Clean Water Act, the 1970 Clean Air Act was enacted only after the earlier non-prescriptive, ambient standards-based approaches had failed.¹¹⁷

conditions also impeded earlier attempts to use federal common law to prevent water pollution. *See* *Missouri v. Illinois*, 180 U.S. 208, 248 (1901) (declining to restrict emissions of sewage from Chicago to address water quality problems in Missouri); *see also* *New York v. New Jersey*, 256 U.S. 296, 309 (1921) (refusing to enjoin discharges of New Jersey sewage into New York harbor).

¹¹¹ Pub. L. No. 92-500, 86 Stat. 816 (1972) (codified as amended at 33 U.S.C. §§ 1251-1376 (1994)).

¹¹² *See* Schoenbrod, *supra* note 17, at 744-45.

¹¹³ *See* Air Pollution Control Act of 1955, ch. 360, 69 Stat. 322.

¹¹⁴ *See* Motor Vehicle Act of 1960, 74 Stat. 162.

¹¹⁵ *See* Clean Air Act, Pub. L. No. 88-206, 77 Stat. 392 (1963).

¹¹⁶ *See* Air Quality Act of 1967, Pub. L. No. 90-148, 81 Stat. 485. This led to the complex combination of ambient standards to be achieved through state implementation plans and technology standards in the 1970 Clean Air Act. The principal exception to this pattern is the regulation of automobile emissions through the Motor Vehicle Air Pollution Act of 1965, Pub. L. No. 89-272, 79 Stat. 992, which required the federal government to promulgate emissions standards for new motor vehicles.

¹¹⁷ A substantial turnaround has occurred in many states since the 1960s, although a number of commentators have maintained that the turnaround in attitudes from the early 1970s has been uneven. As late as the mid-1980s, for example, fewer than 20 states had adopted numerical standards (as opposed to

TABLE 1

Development of the Command and Control Regulatory System			
Period	Action	Air Legislation	Water Legislation
1940s to 1963	research support and/or technical assistance	Air Pollution Control Act (1955) Motor Vehicle Act (1960) Clean Air Act (1963)	Water Quality Standards Act (1948) Federal Water Pollution Control Act (1956)
1964 to 1969	ambient standards with limited federal enforceability	Air Quality Act (1965) ¹¹⁸	Water Quality Act (1965)
Early 1970s	ambient standards with full federal enforceability and technology requirements	Clean Air Act (1970)	Federal Water Pollution Control Act (1972)

A two-part lesson was derived from the experience of the early clean air and clean water efforts. First, it became commonly accepted that ambient standards were both technically and scientifically hard to

narrative standards) for toxics under § 303 of the Clean Water Act. *See, e.g.,* James Banks, *Dumping Into Surface Waters: The Making and Demise of Toxic Discharge Regulations*, in *BEYOND DUMPING* 47 (Bruce Piasecki ed., 1984). One commentator has noted that “the states vary, in capability, funding, authority, and commitment to meet the minimum national standards set by Congress.” John Pendergrass, *You Say You Want a Devolution*, *ENVTL. F.*, Nov./Dec. 1995, at 8.

¹¹⁸ As discussed *supra* at note 116 and accompanying text, the principal exception to this pattern is the Motor Vehicle Air Pollution Act of 1965, which set federally-enforceable technology standards for automobiles.

identify,¹¹⁹ and were almost impossible to use as a basis for enforcement.¹²⁰ Second, it also became commonly accepted that states on the whole could not be relied upon to enforce these non-prescriptive, ambient-based environmental standards.¹²¹

*c. The Third Lesson:
Command and Control Decisionmaking,
1969 to 1979*

For Congress, the answer to the early environmental lessons was the development of the command and control regulatory system. Emission reductions were to be made through the development of a comprehensive federal regulatory system with a limited state role. Enforcement was to be largely a federal responsibility, and was to be predicated largely on assessing compliance with command and control technology requirements, not on the relationship between emissions levels and ambient environmental conditions.

The principal implementing mechanism of this command and control system was selection of best available technology ("BAT") requirements. Command and control strategies set emissions performance standards based on the BAT requirements for a particular source.¹²² The BAT performance standards typically were based on assessments of available or foreseeable technologies and, in certain cases, cost considerations. Estimates of the aggregate impact of the adoption of such standards on total emissions of particular pollutants or ambient environmental

¹¹⁹ See, e.g., DAVID P. CURRIE, AIR POLLUTION: FEDERAL LAW AND ANALYSIS § 709, at 7-26 (1981); Latin, *supra* note 101, at 1273-84.

¹²⁰ See U.S. EPA v. California *ex rel.* State Water Resources Control Bd., 426 U.S. 200, 204 (1976) (noting that technology standards "facilitate enforcement by making it unnecessary to work backward from an overpolluted body of water to determine which point sources are responsible"); see also CURRIE, *supra* note 119, at § 709, 7-26; Barry, *supra* note 110, at 1103.

¹²¹ See, e.g., CONG. RESEARCH SERVICE, 93D CONG., 1ST SESS., 2 A LEGISLATIVE HISTORY OF THE WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972, at 1424-26 (Comm. Print 1973) [hereinafter CLEAN WATER ACT LEGISLATIVE HISTORY]; CONG. RESEARCH SERVICE, 93D CONG. 2D SESS., 1 A LEGISLATIVE HISTORY OF THE CLEAN AIR ACT AMENDMENTS OF 1970, at 402-03 (Comm. Print 1974).

¹²² See, e.g., Clean Air Act § 109, 42 U.S.C. § 7409 (1994) (providing for uniform national standards); Appalachian Power Co. v. U.S. EPA, 671 F.2d 801, 803-04 (4th Cir. 1982) (describing Clean Water Act effluent limitations).

conditions played only a limited role in developing BAT standards and in some cases consideration of environmental conditions was prohibited.¹²³ The impact of the total emission reductions on desired environmental conditions for particular pollutants and particular media was rarely articulated in rulemakings or included in facility-specific requirements, and was certainly not integrated into strategies for achievement of the national goals set by NEPA.¹²⁴

Once the complexity of the BAT process became clear, a third lesson became commonly accepted: the great majority of environmental regulations require complex, technical decisions that are beyond either the capacity or the interest of Congress.¹²⁵ Moreover, although public support for environmental protection was high, the costs were never popular. As a result, Congress had tremendous incentives to articulate sweeping aspirational goals in the initial command and control statutes while providing broad delegations of authority to the EPA (and to a lesser extent, the states) to make many of the hard choices about emission reduction requirements.¹²⁶

¹²³ See, e.g., *Appalachian Power Co.*, 671 F.2d at 808; CLEAN WATER ACT LEGISLATIVE HISTORY, *supra* note 121, at 170, 309 (noting that establishment of best practicable control technology requirements did not include “any requirement to consider the location of sources within a category or to ascertain water quality impact of effluent controls”); Heinzerling, *supra* note 13, at 302 (noting that “[i]n a command and control system, the government dictates the technology that must be installed to control pollution; it need not make a precise decision about the total amount of pollution that it will allow”).

¹²⁴ See, e.g., Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1335 n.4 (noting that although regulation of industrial sources is based in theory on achieving uniform national standards, “[i]n practice, however, the controls imposed on sources in regions that do not comply with the federal air quality standards are based on ‘reasonably available control measures’ — a form of BAT”).

¹²⁵ See Sunstein, *Democratizing America*, *supra* note 26, at 954-57.

¹²⁶ See, e.g., Federal Water Pollution Control Act, 33 U.S.C. §§ 1251(a)(1), 1288, 1312, 1313 (1994); see also PERCIVAL ET AL., *supra* note 33, at 879 (describing the scope of the Clean Water Act goals as “breathtakingly ambitious”); Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1362 (noting that “legislators have been able to indulge in apparently absolute statutory prohibitions of all harmful pollutants”); Anderson, *supra* note 52, at 399 (describing the Clean Water Act goals as “utopian”); John P. Dwyer, *The Pathology of Symbolic Legislation*, 17 *ECOLOGY L.Q.* 233, 235 (1990); Schoenbrod, *supra* note 17, at n.358 (describing the Clean Air Act regulatory system as “ambient standards, planning on a grand scale, and utopian goals”).

For example, the Clean Air Act of 1970 included sweeping goals of protecting public health with an “adequate”¹²⁷ or “ample”¹²⁸ margin of safety. With the possible exception of mobile source requirements,¹²⁹ the statute did not provide clear guidance on how to implement the sweeping goals.¹³⁰ The New Source Performance Standards (“NSPS”) for new air emissions sources applied “best available control technology” requirements to categories of stationary sources that “may contribute significantly” to air emissions. The standard was intended to impose source controls for each category to reduce emissions to levels as low as possible, taking into account costs and technological feasibility.¹³¹ The EPA, not Congress, was to make these determinations by specifying the pounds of pollutant that could be emitted on a per-unit of input or output basis. The broad discretion provided to the EPA Administrator in the Clean Air Act has been described by one commentator as “comparable to the discretion that would be given under the tax laws if the Internal Revenue Commissioner were told to raise a sum of money ‘sufficient to meet federal needs with an adequate margin of safety’ without prescribing the rates and categories of taxation.”¹³² Consequently, the implementation of these provisions was slow, controversial, and fraught with litigation.¹³³

The Clean Water Act followed a similar approach. The Act sought to achieve the broad goals of “fishable and swimmable” waters by 1983, with a total elimination of discharges by 1985.¹³⁴ Section 301 required the EPA to promulgate “effluent limitations” for point sources in order to achieve BAT standards, including “best practicable control technology currently available” by 1977 and “best available technology economically

¹²⁷ 42 U.S.C. § 7409(b)(1) (1994).

¹²⁸ *Id.* § 7412(b)(1)(B).

¹²⁹ *See, e.g., id.* §§ 7521-7590.

¹³⁰ The Clean Air Act goal enumerated in § 101 did form the basis of an early Sierra Club suit to require the EPA to develop a “prevention of significant deterioration” program, however. *See Sierra Club v. Ruckelshaus*, 344 F. Supp. 253 (D.D.C.), *aff’d per curiam without opinion* (D.C. Cir. 1972), *aff’d by an equally divided Court*, 412 U.S. 541 (1973).

¹³¹ *See* 42 U.S.C. § 7411(a)(b) (1994).

¹³² Schoenbrod, *supra* note 17, at 821.

¹³³ More than a decade after Congress required the EPA to establish NSPS, standards were established for only a fraction of industries. *See id.* at 792; *see, e.g., Sierra Club v. Costle*, 657 F.2d 298 (D.C. Cir. 1981).

¹³⁴ *See* Federal Water Pollution Control Act § 101(a)(1)-(2), 33 U.S.C. § 1251(a)(1)-(2) (1994).

achievable” by 1983.¹³⁵ Similarly, section 306 imposed a BAT requirement on new sources.¹³⁶ Under section 307, Congress required the EPA to establish technology-based limitations for toxic substances that would protect public health and water quality with an “ample margin of safety.”¹³⁷

In both the Clean Air Act and the Clean Water Act, Congress attempted to link emissions requirements to ambient environmental conditions. These provisions — the NAAQS and state implementation plan (“SIP”) provisions of the Clean Air Act, and the water quality standards and National Pollutant Discharge Elimination System (“NPDES”) provisions of the Clean Water Act — are a more complex component of the command and control system developed in the early 1970s.¹³⁸ In both statutes, Congress delegated authority to both the EPA and the states to develop ambient standards. The NAAQS provisions of the Clean Air Act require the EPA to establish uniform national standards for air quality, with primary responsibility to achieve the standards delegated to states through SIP requirements and facility-specific permits.¹³⁹ If the various BAT standards do not achieve the NAAQS, states are required to use SIPs and facility-specific permits to impose additional requirements.

Similarly, in sections 303 and 304 of the Clean Water Act, Congress required the states to establish water quality standards based on criteria published by the EPA.¹⁴⁰ The Clean Water Act standards are to be achieved through imposition of conditions in NPDES permits. Congress recognized that the sum of the BAT controls in certain watersheds might be insufficient to achieve water quality standards.¹⁴¹ As a result,

¹³⁵ See Federal Water Pollution Control Act § 301, 33 U.S.C. § 1311 (1994). The Water Quality Act of 1987 extended the 1983 deadline to 1989. The EPA has issued effluent guidelines for more than 50 categories of industrial sources. See 40 C.F.R. pts. 405-471 (1995).

¹³⁶ See Federal Water Pollution Control Act § 306, 33 U.S.C. § 1316 (1994).

¹³⁷ Federal Water Pollution Control Act § 307, 33 U.S.C. § 1317 (1994).

¹³⁸ See 42 U.S.C. §§ 7408-7410 (1994) (Clean Air Act provisions); 33 U.S.C. § 1313 (1994) (Clean Water Act provisions).

¹³⁹ Clean Air Act § 109 required the EPA to establish federally uniform ambient air standards in the form of the NAAQS. See 42 U.S.C. § 7409 (1994).

¹⁴⁰ See Federal Water Pollution Control Act § 303(c)(2), 33 U.S.C. § 1313(c)(2) (1994). The Senate version of the 1972 Clean Water Act would have deleted water quality standards completely. See S. REP. NO. 92-414, at 18 (1971).

¹⁴¹ See CLEAN WATER ACT LEGISLATIVE HISTORY, *supra* note 121, at 246

sections 301 and 302 authorized the imposition of more stringent requirements than the applicable BAT standards if necessary to achieve the water quality standards.¹⁴² In both the SIP and NPDES permit requirements the relationship between the BAT requirements found elsewhere in the statutes and the achievement of ambient conditions was a secondary consideration and was difficult to implement.¹⁴³

Scholars have criticized the NAAQS for failing to make difficult, implicit policy choices regarding emission reductions and for failing to provide clear, precise, action-forcing direction to the EPA and the states.¹⁴⁴ They also have maintained that the NAAQS demonstrate the failure of approaches that identify ends without identifying means.¹⁴⁵ Similar criticisms have been levelled against the Clean Water Act's water quality standards.¹⁴⁶ The use of ambient standards in the Clean Air Act and the Clean Water Act may have been more successful than commonly believed, however. The role of ambient standards in the command and

(remarks of Mr. Harsha).

¹⁴² See Federal Water Pollution Control Act §§ 301(b)(1)(C) & 302(a), 33 U.S.C. §§ 1311(b)(1)(C) & 1312(a) (1994); see also *Mississippi Comm'n on Nat. Res. v. Costle*, 625 F.2d 1269 (5th Cir. 1980). In addition, Clean Water Act § 303(d), 33 U.S.C. § 1313(d) (1994), requires states to identify areas where the cumulative impact of pollution sources will exceed applicable water quality criteria, and to calculate the total maximum daily load ("TMDL") that a segment of water can receive of a particular pollutant without exceeding ambient standards. See, e.g., *Alaska Center for the Env't v. Reilly*, 762 F. Supp. 1422 (W.D. Wash. 1991) (applying the TMDL process). States allocate the total loads among the sources along a body of water, often based on historical discharge levels. The TMDL program has been difficult to implement. See *Administrative Efforts to Improve TMDL Program Under Way*, EPA Official Says, Daily Env't Rep. (BNA) A-5 (July 16, 1996) (noting that approximately 15 lawsuits have been filed to require the EPA or states to implement the TMDL program); *Final 303(d) CWA List Released; Next Step Is Development of TMDLs*, Daily Env't Rep. (BNA) A-5, A-6 (July 18, 1996) (noting that at its current pace it will take Oregon 400 years to complete TMDLs).

¹⁴³ See, e.g., *Latin*, supra note 101, at 1305, 1308 (noting that although the Clean Water Act "authorizes more stringent water quality-related pollutant limitations to supersede technology based standards . . . the promulgation of more stringent water quality standards apparently has not been prevalent").

¹⁴⁴ See *Anderson*, supra note 52, at 402; *Schoenbrod*, supra note 17, at 748-51.

¹⁴⁵ See *Heinzerling*, supra note 13, at 338-39.

¹⁴⁶ See *ANDERSON ET AL.*, supra note 90, at 399-400; *Houck*, *The Regulation of Toxic Pollutants*, supra note 72, at 10,543.

control system and their implications for addressing the second generation environmental problems are addressed in Part V.

2. *Tightening the Command and Control Response: 1980 to 1990*

By the early 1980s, the congressional response to environmental problems was more complex. The magnitude of pollution control costs to industry and local governments had become increasingly clear by the mid-1970s, as had public resistance to a number of intrusive environmental requirements such as transportation controls in Southern California.¹⁴⁷ Even so, overall public support for environmental protection remained strong.¹⁴⁸ In addition, distrust between the legislative and executive branches was high.

This combination of factors contributed to enactment of new environmental laws with far more prescriptive statutory deadlines and requirements imposed on the EPA in order to address public support for strong environmental measures. At the same time, Congress continued to delegate authority to the EPA to impose technology-based requirements in many cases and to make many of the most difficult and politically sensitive decisions. The length and prescriptive nature of environmental statutes during this period increased substantially.¹⁴⁹ Among the statutes enacted were the Hazardous and Solid Waste Amendments ("HSWA") to the RCRA,¹⁵⁰ with numerous "soft hammers" and "hard hammers"¹⁵¹ in the event of EPA inaction; the Safe Drinking Water Act Amendments

¹⁴⁷ See PERCIVAL ET AL., *supra* note 33, at 795 (noting a "firestorm of protest" against proposed SIP gas rationing regulations); Schoenbrod, *supra* note 17, at 770-71.

¹⁴⁸ See, e.g., Schoenbrod, *supra* note 17, at 433 (citing BNA report); Richard Stewart, *Controlling Environmental Risks Through Economic Incentives*, 13 COLUM. J. ENVTL. L. 153, 154 (1988) [hereinafter Stewart, *Controlling Environmental Risks*] (noting that in the late 1970s and early 1980s "the public remained strongly committed to environmental goals").

¹⁴⁹ Compare Comprehensive Environmental Response, Compensation and Liability Act, Pub. L. No. 96-510, 94 Stat. 2767 (1980) (codified as amended at 42 U.S.C. §§ 9601-9675 (1994)) (approximately 50 pages long) with Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2399 (codified at 42 U.S.C. §§ 7401 to 7621 (1994)) (approximately 700 pages long).

¹⁵⁰ Pub. L. No. 98-616, 98 Stat. 3221 (1984) (codified at 42 U.S.C. §§ 6901-6992 (1994)) (amending Pub. L. No. 94-550, 90 Stat. 2796 (1976)).

¹⁵¹ See RCRA § 3004, 42 U.S.C. § 6924 (1994).

of 1986, with a requirement (removed in 1996) that the EPA promulgate twenty-five new maximum contaminant levels for drinking water every three years,¹⁵² and the 1990 Clean Air Act Amendments,¹⁵³ with numerous statutory deadlines for air toxics and other air emissions.

Although remarkably prescriptive in requiring the EPA to make difficult decisions on specified timetables, these statutes did not deviate from the lessons learned from the pre-command and control era, and only slightly increased the congressional resolution of the most difficult environmental, economic, and political issues.¹⁵⁴ Examples of the continued broad delegations include the 1990 Clean Air Act Amendments' requirement that the EPA establish "reasonably achievable control technology" ("RACT") for certain existing sources of emissions in non-attainment areas¹⁵⁵ or "maximum achievable control technology" ("MACT") for certain sources of hazardous air pollutants.¹⁵⁶ Under the new, more prescriptive approach of this period, Congress again could articulate its general support for the environment while leaving the EPA and the states to face criticisms about the high costs and inefficient application of environmental requirements to any particular chemical substance, region, or industry.¹⁵⁷ The linkage between BAT standards and ambient environmental conditions remained tenuous at best.

¹⁵² Pub. L. No. 99-339, 100 Stat. 642 (1986) (codified at 42 U.S.C. § 201 (1994)). The 25 MCL per year requirement was rescinded by the 1996 Safe Drinking Water Act Amendments, Pub. L. No. 104-182, 110 Stat. 1613.

¹⁵³ Pub. L. No. 101-549, 104 Stat. 2399 (1990) (codified as amended at 42 U.S.C. §§ 7401-7642 (1994)).

¹⁵⁴ See, e.g., Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1354 (noting that the BAT system enables Congress to "content itself with mouthing pieties about the need to achieve 'reasonable further progress'").

¹⁵⁵ 42 U.S.C. § 7503 (1994).

¹⁵⁶ See Clean Air Act Amendments of 1990 § 301, 42 U.S.C. § 7412 (1994).

¹⁵⁷ A number of commentators have proposed revisions to the broad goals-narrow technology approach. For example, as early as 1980 Ackerman and Hassler proposed that Congress define ends-based outcomes, such as achieving "ambient air quality improvements that promise to add at least 25,000 years to the life expectancies of the American people by 1984." Bruce A. Ackerman & William T. Hassler, *Beyond the New Deal: Coal and the Clean Air Act*, 89 YALE L.J. 1466, 1568-69 (1980).

3. *The Missing Link: Statutory Requirements and Environmental Conditions*

Although environmental outcomes on occasion have been incorporated into statutory requirements, each of the principal lessons of the early development of environmental law counseled against the use of ambient standards: (1) ecology, generally, and ambient conditions, in particular, were only poorly understood; (2) ambient standards were hard to enforce, particularly by the states; and (3) decisionmaking for BAT standards required complex, technical decisions that necessitated congressional delegation to the EPA. Consequently, environmental regulatory and judicial activity during the last two decades have centered on the promulgation and implementation of BAT requirements by the EPA.

At least three results have occurred. First, substantial environmental gains have been achieved, but with high costs that have led to a backlash against regulation. Second, the linkage between BAT standards and the desired state of the environment, whether specific ambient conditions or the general goals announced in NEPA, has rarely been litigated or discussed. Third, as discussed above, the EPA has been forced to make many difficult economic and political trade-offs inherent in implementing and enforcing the BAT statutes.¹⁵⁸

The absence of a linkage between BAT standards and the state of the environment produced wide-ranging consequences during the first two decades after enactment of the Clean Air Act and Clean Water Act in the early 1970s. Little momentum developed for the study or enactment of desired national environmental conditions. The relative threat of second generation sources, while not ignored, did not become the subject of widespread debate or action. In fact, congressional debates over the environmental goals in NEPA, or environmental conditions generally, have been almost non-existent.¹⁵⁹ Many modern environmental casebooks have given little attention to the existence of the NEPA goals.¹⁶⁰ Most importantly, neither the NEPA goals nor, with very limited

¹⁵⁸ See Schoenbrod, *supra* note 17, at 813-14. Schoenbrod notes that in a non-zero sum situation, leniency in enforcement can be used to avoid explicit trade-offs among sources. *Id.*

¹⁵⁹ See, e.g., Heinzerling, *supra* note 13, at 318-25. A recent computer database search revealed an occasional genuflection toward the importance of the NEPA goals, but no discussion or debate about the goals.

¹⁶⁰ See, e.g., ANDERSON ET AL., *supra* note 90, at 683-84; WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW: AIR AND WATER POLLUTION 130-31 (1986); SUSTAINABLE ENVIRONMENTAL LAW, *supra* note 31, at 1217-21.

exceptions, any other environmental goals or outcomes have created legally enforceable rights in the command and control regulatory system. I would hazard a guess that the majority of environmental lawyers do not know that the NEPA goals exist and can be reasonably comfortable that they do not risk malpractice in their ignorance.

B. Criticisms of the Command and Control System

1. Economic and Legal Criticisms

Although the limited link between the BAT-driven command and control requirements and environmental conditions was a rational response to the information base and policy debate in the 1970s and 1980s, the resulting environmental regulatory system is under remarkable pressure in the 1990s. Despite the environmental gains discussed in Part I, the weaknesses attributed to the command and control system, and BAT in particular, have become much-plowed ground in academic scholarship and the popular press.¹⁶¹ Commentators have identified its high costs and inefficiencies,¹⁶² intrusiveness,¹⁶³ susceptibility to cap-

¹⁶¹ See, e.g., ACKERMAN & HASSLER, *supra* note 11; CASS R. SUNSTEIN, *AFTER THE RIGHTS REVOLUTION: RECONCEIVING THE REGULATORY STATE* 81 (1994) [hereinafter SUNSTEIN, *AFTER THE RIGHTS REVOLUTION*]; Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1334-40; *Regulating Regulation*, *supra* note 28, at A18 (maintaining that some regulations “have gone way too far or are monuments to illogic”).

¹⁶² See, e.g., SUNSTEIN, *AFTER THE RIGHTS REVOLUTION*, *supra* note 161 (“[B]etween 1972 and 1985 the United States spent no less than \$632 billion for pollution control.”); Robert W. Hahn & John A. Hird, *The Costs and Benefits of Regulation: Review and Synthesis*, 8 *YALE J. ON REG.* 233, 271-72 (1991) (estimating that expenditures equalling over \$90 billion, or 2.5% of gross domestic product, are spent on environmental regulation each year); see also U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF POLICY, PLANNING, AND EVALUATION, *ENVIRONMENTAL INVESTMENTS; THE COST OF A CLEAN ENVIRONMENT* at v (1990) (estimating that total annualized costs for all pollution control activities in the United States will rise from 0.9% of GNP in 1972 to 2.8% in 2000); Ackerman & Stewart, *Reforming Environmental Law: The Democratic Case*, *supra* note 13, at 177 (asserting that “[n]o serious student denies that the existing system achieves its cleanup goals at an extra-ordinarily high cost”).

¹⁶³ See *infra* notes 193-200 and accompanying text. See also DEWITT JOHN, *CIVIC ENVIRONMENTALISM: ALTERNATIVES TO REGULATION IN STATES AND COMMUNITIES* 10 (1994) (quoting an Iowan as stating that “[i]t may take an

ture by special interests,¹⁶⁴ tendency to freeze technology,¹⁶⁵ and tendency to generate litigation.¹⁶⁶ The relationship between federal and state responsibilities also has been called into question, with critics maintaining that the federal command and control system leaves an inadequate role for the states.¹⁶⁷

Moreover, the symptoms of dysfunction abound. At any given time, the EPA is a litigant in more than six hundred lawsuits¹⁶⁸ and has several hundred rulemakings underway, including numerous “major” rulemakings¹⁶⁹ which on average take four years to com-

occupying army to regulate the 100,000 farmers in our state.”). The difficulties of addressing diffuse sources are not limited to the United States. *See Farm Pollution Row Brings Down Flanders Government*, ENV’T WATCH WESTERN EUROPE, Apr. 7, 1995, at 14 (discussing the fall of a provincial government in Belgium arising from attempts to limit the amount of manure used as fertilizer by farmers). In addition, an environmental issue brought down the Dutch government in 1989. *See* JOHNSON, *supra* note 14, at 49.

¹⁶⁴ *See infra* notes 201-08 and accompanying text. *See, e.g.*, ACKERMAN & HASSLER, *supra* note 11, at 44-48; Stewart, *Madison’s Nightmare*, *supra* note 19, at 335.

¹⁶⁵ *See, e.g.*, Sunstein, *Administrative Substance*, *supra* note 38, at 627-29 (describing BAT strategies as a “defining characteristic of the regulation of the air, water and workplace conditions”). Professor Sunstein has identified a number of key problems with BAT: (1) BAT strategies discourage citizen and representative debate about environmental ends; (2) BAT requirements produce “wildly inefficient” results because BAT requirements do not account for differences among plants, industries and geographical areas; (3) some BAT requirements penalize new products or technologies by imposing BAT on new facilities rather than existing facilities; and (4) BAT requirements focus on “superficial symptoms rather than underlying causes of pollution.” *Id.* at 628, 630.

¹⁶⁶ *See, e.g.*, PERCIVAL ET AL., *supra* note 33, at 883 (noting that by 1977 over 200 lawsuits had been filed against the EPA’s Clean Water Act effluent guidelines); Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1337 (noting that BAT standards “provide a fertile ground for complex litigation in the form of massive adversary rulemaking proceedings and protracted judicial review”).

¹⁶⁷ *See infra* notes 210-16 and accompanying text.

¹⁶⁸ *See, e.g.*, Leslie Kaufman, *Cabinet Fever*, GOV’T EXEC., July 1993, at 32, 35. *See generally* Rosemary O’Leary, *The Impact of Federal Court Decisions on the Policies and Administration of the U.S. Environmental Protection Agency*, 41 ADMIN. L. REV. 549 (1989).

¹⁶⁹ *See, e.g.*, Regulatory Agenda, 60 Fed. Reg. 23,928 (1995). The initial Reagan Administration executive order on regulatory review defined a “major” rulemaking as one that is likely to produce an impact on the economy of \$100

plete.¹⁷⁰ Environmental regulations often must be interpreted by plant managers and others under emergency conditions, yet the regulations have been described as “stupefyingly complex”¹⁷¹ and fill at least sixteen volumes of the *Code of Federal Regulations*.¹⁷² Furthermore, the system based on installation and operation of BAT provides only limited opportunities for innovation by the regulated community and government.

The command and control regulatory system also has been criticized for its erratic agenda. Critics maintain that although the command and control system has achieved substantial environmental gains, the correspondence between its agenda and the most critical remaining environmental problems is limited.¹⁷³ The absence of overall objectives has enabled critics to claim both that major environmental problems remain unaddressed¹⁷⁴ and that the system has regulated many of the most apparent or most substantial risks, with current actions focusing on expensive efforts to eliminate “the remaining one percent.”¹⁷⁵

million or more, or a substantial increase in costs or prices. Executive Order No. 12,291, 3 C.F.R. § 127 (1981). The Clean Air Act Amendments of 1990 alone required the EPA to promulgate more than 200 rulemakings in two years. See PERCIVAL ET AL., *supra* note 33, at 766.

¹⁷⁰ See, e.g., Kaufman, *supra* note 168, at 35.

¹⁷¹ Anderson, *supra* note 52, at 411, 413 (noting that the EPA published almost 3500 pages of proposed and final regulations in the Federal Register in the first half of 1994).

¹⁷² See 40 C.F.R. §§ 1-1517 (1996). The difficulty of understanding these regulations has been noted recently by several federal courts that have rejected environmental enforcement actions on the grounds that the agency interpretations of complex environmental regulations did not provide fair notice regarding the regulatory requirements. See, e.g., General Elec. Co. v. U.S. EPA, 53 F.3d 1324, 1331 (D.C. Cir. 1995) (holding that a “person ‘of good faith’ would not reasonably expect” the EPA’s interpretation of a PCB rule); Massachusetts v. Blackstone Valley Elec. Co., 67 F.3d 981, 991 (1st Cir. 1995) (stating that a “complicated regulatory regime like CERCLA or the CWA cannot function effectively unless citizens are given fair notice of their obligations”). The environmental regulatory framework includes more than twenty federal statutes and six federal agencies. See ANDERSON ET AL., *supra* note 90, at xxvii.

¹⁷³ See, e.g., Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1337 (noting that “[a] BAT strategy is inconsistent with intelligent priority setting”).

¹⁷⁴ See, e.g., Houck, *The Regulation of Toxic Pollutants*, *supra* note 72, at 10,540-41.

¹⁷⁵ Bud Ward, *Playing the Few Cards Left*, 12 ENVTL. F. 4 (1996) (quoting Norman Ornstein); see Farber, *supra* note 8, at 1294 (getting the “last five

Regardless of which, if any, of these views is correct, the current environmental regulatory system is unable to defend its allocation of resources. Congressional enactment of new environmental laws tracks environmental disasters more closely than a strategic attack on the most important environmental problems.¹⁷⁶ Each of these statutes may have been a necessary and appropriate response to environmental problems, but none of them was the product of a broad strategic decision about which environmental problems should be addressed first.

The EPA's attempts to prioritize problems have suffered a similar fate. In particular, the EPA's attempts to prioritize problems based primarily on risk, such as the EPA Science Advisory Board's 1990 *Regulating Risk* report¹⁷⁷ and the 1987 EPA report *Unfinished Business*,¹⁷⁸ have triggered debate about the use of risk assessment and the need for priorities.¹⁷⁹ But controversies over the appropriate use of risk assessment abound, and the EPA has only limited control over its allocation of human and financial resources, particularly after the last

percent" can prevent effective decisionmaking) (citing DAVID HALBERSTAM, *THE RECKONING* 516 (1986)). The actual extent to which we are in a last one percent situation is highly debatable. The perception that we are is so widespread, however, that the idea is having a significant effect on the public debate. *See, e.g.,* Stewart, *Environmental Regulation*, *supra* note 14, at 2085. Attempts to define a risk-oriented agenda have been controversial. Public perceptions of risk diverge widely from experts' perceptions. *See* STEVEN BREYER, *BREAKING THE VICIOUS CIRCLE: TOWARD EFFECTIVE RISK REGULATION* 21, 34 (1993); Farber, *supra* note 8, at 1283-85. The narrow focus of the risk debate undercuts its use as an agenda-setting tool, and scholars have noted the heavy administrative burdens that may be imposed by risk analyses. *See* Oliver A. Houck, *Risk Management Gone Too Far?*, ENVTL. F., Mar./Apr. 1994, at 8, 8-10 (book review) (reviewing BREYER, *supra*) [hereinafter Houck, *Risk Management*].

¹⁷⁶ *See, e.g.,* Anderson, *supra* note 52, at 414 (noting that environmental statutes developed as Congress reacted to "the environmental crisis of each particular year"). Examples that are commonly cited are CERCLA, 42 U.S.C. §§ 9601-9675 (1994) (enacted after public concern over Love Canal), the Toxic Release Inventory provisions of the 1986 Superfund Amendments and Reauthorization Act ("SARA"), 42 U.S.C. § 11022 (1994) (enacted after the Bhopal disaster), and the Oil Pollution Act of 1990, 33 U.S.C. §§ 2701-2761 (1994) (enacted after the Exxon Valdez oil spill).

¹⁷⁷ U.S. ENVIRONMENTAL PROTECTION AGENCY, SCIENCE ADVISORY BOARD, *REGULATING RISK* (1990).

¹⁷⁸ U.S. ENVIRONMENTAL PROTECTION AGENCY, *UNFINISHED BUSINESS* (1987).

¹⁷⁹ *See, e.g.,* Farber, *supra* note 8, at 1281-85.

decade of statutory deadlines enforced through court orders.¹⁸⁰ Consequently, although the EPA's attempts to identify the most substantial risks have placed an important new emphasis on the need for priority-setting, they have had a limited impact on the overall direction of the EPA's resources and regulatory efforts.¹⁸¹

2. *Environmental Criticisms*

The ability of the command and control system to achieve long-term human health and environmental objectives (albeit largely undefined) also has been called into question.¹⁸² Significant improvements in environmental quality have occurred during the past twenty-five years,¹⁸³ despite large increases in population and economic activity, and many of these gains are the product of BAT requirements.¹⁸⁴ Nevertheless, critical problems persist, and the long-term health of the environment is far from assured.¹⁸⁵ In particular, the command and control system is

¹⁸⁰ See Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1360 n.61 (noting that priority-setting through litigation provides no assurance of "a sensible allocation of limited administrative and compliance resources"); Dwyer, *supra* note 126, at 236 (noting that "[j]udicial intervention denied the Agency the opportunity to create a functional regulatory program and advanced few, if any, of Congress' substantive goals"). In addition, numerous studies suggest that public reaction to risks is not rational: highly visible risks are overestimated, while less dramatic risks are underestimated. See, e.g., Sunstein, *Democratizing America*, *supra* note 26, at 974.

¹⁸¹ See NAPA REPORT, *supra* note 57, at 17-18. The EPA has made several recent attempts to establish relative priorities among environmental objectives, such as the EPA Goals Project, the New Generation of Environmental Protection (EPA's Strategic Plan), and, for enforcement policy, the creation of the Office of Compliance Assurance in the new EPA Office of Enforcement and Compliance Assurance. No formal mechanism exists to translate priorities, whether based on risk or any other criterion, into the legal and budgetary responsibilities of the EPA and the other affected federal agencies.

¹⁸² See, e.g., NAPA REPORT, *supra* note 57, at 1-5.

¹⁸³ See *supra* notes 36-55 and accompanying text.

¹⁸⁴ See, e.g., Oliver A. Houck, *Of Bats, Birds, and B-A-T: The Convergent Evolution of Environmental Law*, 63 MISS. L.J. 403 (1994) [hereinafter Houck, *Of Bats, Birds, and B-A-T*]; Latin, *supra* note 101, at 1267; Sidney A. Shapiro & Thomas O. McGarity, *Not So Paradoxical: The Rationale for Technology-Based Regulation*, 1991 DUKE L.J. 729.

¹⁸⁵ Defenders of a strong federal regulatory role have maintained that the effectiveness of the command and control system has been hampered by an

not well suited to address the multiple, diffuse, non-point sources that characterize many of the emerging second generation environmental problems.¹⁸⁶

Furthermore, although the attempts to address the first generation problems garnered broad popular support early on, attempts to address second generation problems face greater difficulties. Efforts to address first generation sources often attacked visible emissions from large polluters. The "enemy" was clear: large, industrial polluters. The imposition of costs through command and control regulations on these large point sources required little sacrifice from the general public. With some notable exceptions, the costs of command and control regulations for the general public were so diffuse that resistance to them typically was limited to the specific industry, employees, or local government affected.

Similarly, the large point source emissions that characterize the first generation problems may have been the most amenable to regulation through command and control requirements. These sources often are sufficiently homogeneous to enable BAT standards to be identified for source categories. The large size and comparatively small total number of sources also facilitated vigorous enforcement of the BAT requirements.

The second generation problems may pose no less threat to the environment, but they are less susceptible to regulation by currently

unintegrated approach, ranging from the tendency to move contaminants from one medium to another, to a focus on end-of-the pipe controls rather than pollution prevention and non-point sources. *See, e.g.,* Lakshman Guruswamy, *Integrating Thoughtways: Re-Opening of the Environmental Mind?*, 1989 WIS. L. REV. 463, 472-76. They have pointed to an inability to integrate environmental concerns into areas of economic and other incentives (e.g., tax, resources, and transportation planning). *See, e.g.,* SUSTAINABLE ENVIRONMENTAL LAW, *supra* note 31, at 182-84. Concerns also have been raised about the disproportionate burden of risks on low income and minority populations. *See, e.g.,* Jon C. Dubin, *From Junkyards to Gentrification: Explicating a Right to Protective Zoning in Low Income Communities of Color*, 77 MINN. L. REV. 739 (1993); Richard J. Lazarus, *Pursuing "Environmental Justice": The Distributional Effects of Environmental Protection*, 87 NW. U. L. REV. 787 (1993); Peter L. Reich, *Greening the Ghetto: A Theory of Environmental Race Discrimination*, 41 U. KAN. L. REV. 271 (1992); *see also* Executive Order No. 12,898, *reprinted as amended* in 3 C.F.R. § 321 (1996).

¹⁸⁶ Attempts to address these problems in the 1970s included mandatory gas rationing and other measures. These were extremely unpopular. *See* Schoenbrod, *supra* note 17, at 770-71; PERCIVAL ET AL., *supra* note 33, at 795.

available command and control mechanisms, and they are less likely to generate public support.¹⁸⁷ The large number and variability of the sources of the second generation problems may make them less amenable to BAT regulations. In addition, for many of these second generation problems, such as urban and agricultural run-off, the enemy is not an easily identified industrial polluter but a broad pattern of activities, often involving small businesses and the general public itself. Finally, numerous studies have suggested that the public overreacts to visible, dramatic risks and does not respond to equally important but less dramatic risks.¹⁸⁸ Because they originate in multiple, diffuse sources and because their impacts often are long-term or occur on a global level, the second generation problems are particularly difficult for the public to understand and to respond to.

Perhaps as a result, attempts to use command and control requirements to address the second generation problems have fueled resistance to government intrusion. As early as the mid-1970s, EPA attempts to use command and control approaches other than BAT standards, such as restricting commuting to achieve Clean Air Act requirements in Southern California, met with stiff opposition.¹⁸⁹ Recent history also provides numerous examples of adverse reactions to the command and control system's attempts to regulate diffuse, multiple non-point sources. In particular, EPA regulations aimed at restricting the emissions of smog precursors from a wide variety of sources, ranging from dry cleaners to mobile sources to a variety of consumer products, have been unpopular.¹⁹⁰ Despite the importance of second generation sources, the constant

¹⁸⁷ See, e.g., ANDERSON ET AL., *supra* note 90, at 356 (describing the solution to non-point source water pollution as "a complicated mix of institutional and technical factors"). The problems with regulating behavior to address second generation sources have been apparent for some time. See, e.g., Eli Chernow, *Implementing the Clean Air Act in Los Angeles: The Duty to Achieve the Impossible*, 4 *ECOLOGY L.Q.* 537 (1975) (noting that achieving air quality standards in the California South Coast Air Basin would have required motor vehicle miles travelled to be reduced by 80%).

¹⁸⁸ See, e.g., Sunstein, *Democratizing America*, *supra* note 26, at 974.

¹⁸⁹ See, e.g., PERCIVAL ET AL., *supra* note 33, at 795.

¹⁹⁰ See, e.g., Carolyn Whetzer, *Air Pollution: Southern California Dumps Rideshare Rule, Adopts Measure Relying on Menu of Options*, *Daily Env't Rep.* (BNA) A-9, A-10 (Dec. 13, 1995); see also Small Business Regulatory Enforcement Fairness Act, Pub. L. No. 104-121, 110 Stat. 847 (1996). The best recent examples arise from the EPA's attempt to implement the 1990 Clean Air Act Amendments provisions that address second generation problems, such as the

theme of many critics is that federal intrusion into consumer and small business activity is unwarranted and unacceptable. The animus toward these types of restrictions is deep.

Urban and agricultural non-point water pollution is a case in point. Although the CEQ and the EPA have identified agricultural runoff as the principal remaining water quality problem, federal attempts to limit non-point source emissions directly, or to prompt states to control non-point sources, for example, through mandated state or regional watershed planning, have met with limited success.¹⁹¹ The difficulty of applying command and control regulations to non-point water pollution problems was highlighted recently by one commentator, who quoted an Iowa farmer as saying that “[i]t may take an occupying army to regulate the 100,000 farmers in our state.”¹⁹² To the extent many of the remaining environmental problems arise from second generation sources such as small air emitters and urban and agricultural runoff, the traditional command and control approaches are unlikely to succeed.

3. *Democracy Criticisms: The Democracy Deficit*

In recent years, a number of scholars, including Professors Bruce Ackerman, Richard Stewart, and Cass Sunstein, have identified a more

car pooling incentives of the Employee Commute Option System (“ECOS”), *see, e.g.*, 42 U.S.C. § 7511a(d) (1994); 59 Fed. Reg. 42,056, 42,056-57 (1994) (discussing the ECOS as implemented in Indiana); automobile inspection and maintenancesystems, *see, e.g.*, Inspection/MaintenanceFlexibility Amendments, 60 Fed. Reg. 20,934 (1995) (to be recodified at 40 C.F.R. pt. 517 (proposed Apr. 28, 1995) (recent automobile inspection and maintenance rules); and regulation of air emissions from a variety of sources ranging from dry cleaners to outboard motors and charcoal grilling. These actions are directed at important second generation sources, but have met with criticism and resistance from businesses, states, Congress, and the general public. *See Ackerman & Stewart, Reforming Environmental Law, supra* note 11, at 1349 (noting that under a command and control approach “regulators must consistently undertake new, difficult, and unpopular initiatives to impose ever more stringent BAT controls on existing sources in order to accommodate economic growth without increased pollution”).

¹⁹¹ *See, e.g.*, Clean Water Act § 208, 33 U.S.C. § 1288 (1994) (mandated planning process). Section 208 requires states to develop watershed plans for waters affected by point and non-point sources. *See ANDERSON ET AL., supra* note 90, at 363 (noting that “a number of implementation problems weakened the § 208 planning effort”).

¹⁹² JOHN, *supra* note 163, at 10.

fundamental problem with the BAT-driven command and control system: the process of selecting the specific technologies or emissions rates that are at the core of the command and control system is not amenable to meaningful public participation.¹⁹³ Overall, these scholars have noted that the command and control system has focused the public debate on the means of environmental protection, such as the appropriate BAT control technology for a particular source, and away from the ultimate ends of environmental protection, such as the acceptable level of a particular type of pollution.¹⁹⁴ These scholars have identified at least two major concerns with this focus on environmental means: (1) the general public is for all intents and purposes excluded from participating in the most important decisionmaking within the environmental regulatory system; and (2) the centralization of decisionmaking in the federal environmental regulatory system has made it vulnerable to control by interested factions and has diminished the role of states and localities. According to Professor Stewart, these concerns comprise a “democracy deficit” in the command and control system.¹⁹⁵

As to the first concern, Professors Stewart and Ackerman have maintained that the BAT system discourages a “serious political encounter” with questions about how clean the environment should be and how much money should be spent on it: “BAT focuses Congressional debate, as well as administrative and judicial proceedings, upon arcane technological questions which rapidly exhaust the time and energy that

¹⁹³ See Sunstein, *Democratizing America*, *supra* note 26, at 957-59. See generally Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11; Ackerman & Stewart, *Reforming Environmental Law: The Democratic Case*, *supra* note 13; Stewart, *Controlling Environmental Risks*, *supra* note 148; Stewart, *Madison's Nightmare*, *supra* note 19; Sunstein, *Administrative Substance*, *supra* note 38, at 607.

¹⁹⁴ See, e.g., Ackerman & Stewart, *Reforming Environmental Law: The Democratic Case*, *supra* note 13, at 171 (describing the current regulatory choices as “a flood of technocratic mumbo-jumbo”).

¹⁹⁵ Stewart, *Antidotes*, *supra* note 12, at 85. This view about the failure of government actions to reflect democratic ideals extends to both the legislative and executive branches. See Frank H. Easterbrook, *The State of Madison's Vision of the State: A Public Choice Perspective*, 107 HARV. L. REV. 1328, 1335 (1995) [hereinafter Easterbrook, *Madison's Vision*] (“All participants in this discourse agree that Madison’s vision of a national legislature in which most members, most of the time, look to the public good, rather than to the clamor of private interests, has not been realized.”).

most politicians, let alone the larger public, are willing to spend on environmental matters."¹⁹⁶ Instead, they argue that

[r]ather than debating the difference between the 'best available control technology' and 'lowest achievable emission rate,' [in a system based on environmental ends] citizens may focus upon a different question when the environmental acts come up for revision: During the next *n* years, should we instruct the EPA gradually to decrease (or increase) the number of pollution rights by *x* percent?¹⁹⁷

Similarly, Professor Sunstein has noted that the need to select particular technologies in many environmental statutes focuses the debate on "the largely incidental and nearly impenetrable question of what technologies are now available."¹⁹⁸ This focus distracts the debate from the more important questions of "the appropriate degree and nature of regulatory protection."¹⁹⁹ Overall, these scholars maintain that the product of BAT standards is an absence of transparency in decisionmaking, lack of public accountability among elected representatives, and ultimately a loss of democratic control over environmental decisions.²⁰⁰

¹⁹⁶ Ackerman & Stewart, *Reforming Environmental Law: The Democratic Case*, *supra* note 13, at 189.

¹⁹⁷ *Id.* Several commentators have asserted that broad public participation and reasoned deliberation about complex issues may simply be incompatible. See Edley, *supra* note 92, at 602; see also Note, *Civic Republican Administrative Theory: Bureaucrats as Deliberative Democrats*, 107 HARV. L. REV. 1401, 1403-05 (1994).

¹⁹⁸ Sunstein, *Democratizing America*, *supra* note 26, at 958.

¹⁹⁹ Sunstein, *Administrative Substance*, *supra* note 38, at 629.

²⁰⁰ See *id.* at 629; Cass R. Sunstein, *Well-Being and the State*, 107 HARV. L. REV. 1303, 1304 (1994). Professor Sunstein's work has also drawn on the renewed interest in civic republicanism. See Cass R. Sunstein, *Interest Groups in American Public Law*, 38 STAN. L. REV. 29 (1985) [hereinafter Sunstein, *Interest Groups*]; Cass R. Sunstein, *Beyond the Republican Revival*, 97 YALE L.J. 1539 (1988) [hereinafter Sunstein, *Beyond*]; MARK V. TUSHNET, *RED, WHITE AND BLUE: A CRITICAL ANALYSIS OF CONSTITUTION LAW* (1988) (proposing the opposition of "liberal" and "republican" traditions); Frank I. Michelman, *The Supreme Court, 1985 Term — Foreword: Traces of Self-Government*, 100 HARV. L. REV. 4 (1986); Frank I. Michelman, *Law's Republic*, 97 YALE L.J. 1493 (1988) (contrasting the dominant "pluralist" views with "liberal republicanism" or "Madisonian Republicanism"); Richard H. Fallon, Jr., *What Is Republicanism?*, 102 HARV. L. REV. 1695, 1697 (1989) (identifying "core tenets" including "that human beings are essentially political animals, that they can fulfill their

The second concern is that BAT standards facilitate factional control over the regulatory process. This view has been expressed most clearly in Professor Stewart's essay entitled *Madison's Nightmare*²⁰¹ and in several recent articles by Professor Sunstein.²⁰² According to this view, James Madison's principal fear was the control of the democratic process by economic and ideological factions. In Federalist No. 10, Madison asserted that the national government, by virtue of its large size and diverse composition, would provide more distance from these factions than state or local governments, thus better enabling the federal government to debate and determine the public good.²⁰³ Madison's prescriptions for the avoidance of factions thus were an attempt to stimulate rational democratic discourse regarding the public good.²⁰⁴

Professors Stewart and Sunstein have maintained that despite the design of the national government, factions exert significant influence over the regulatory system, reproducing on a national level the problems that Madison feared would occur on a local level.²⁰⁵ The complex, technological focus of the environmental command and control system

natures only by participating in self-government, and that the most important aims of the political community should be to promote virtue among the citizenry and to advance the common good" (footnotes omitted)).

²⁰¹ Stewart, *Madison's Nightmare*, *supra* note 19.

²⁰² See, e.g., Sunstein, *Administrative Substance*, *supra* note 38, at 625-31; see also Gary Lawson, *The Rise and Rise of the Administrative State*, 107 HARV. L. REV. 1231 (1994).

²⁰³ See THE FEDERALIST NO. 10, at 77-78 (James Madison) (Clinton Rossiter ed., 1961); Stewart, *Madison's Nightmare*, *supra* note 19, at 335; see also Cass R. Sunstein, *Factions, Self-Interest and the APA: Four Lessons Since 1946*, 72 VA. L. REV. 271, 272 (1986). Of course, even the existence of the "public good" is problematic. See Easterbrook, *Madison's Vision*, *supra* note 195, at 1339 (describing the Madisonian concept of the public good to be "empty"); Steven G. Gey, *The Unfortunate Revival of Civic Republicanism*, 141 U. PA. L. REV. 801, 854-94 (1993) (noting the substantive and procedural problems associated with the public good).

²⁰⁴ See Sunstein, *Interest Groups*, *supra* note 200, at 38-48; Sunstein, *Beyond*, *supra* note 200, at 1547-58; see also Easterbrook, *Madison's Vision*, *supra* note 195, at 1331-33 (stating that the prescriptions envisioned by Madison included the design of institutions to provide decisionmakers with "agency slack" or distance from the direct political fray, such as the use of the electoral college in presidential elections, the election of senators by state legislatures, and the diversity of the states in the federal structure).

²⁰⁵ See, e.g., Stewart, *Madison's Nightmare*, *supra* note 19, at 335; Sunstein, *Democratizing America*, *supra* note 26, at 958.

contributes to this modern factionalism by excluding non-specialists from the public debate over the development of BAT standards.²⁰⁶ These scholars also note that command and control regulatory systems shift power from the President and Congress to the unelected federal bureaucracies and courts because of the tendency of the command and control systems to require far more decisions than can be overseen by the President or Congress.

As a result of the exclusion of non-specialists and the flood of technical decisionmaking, congressional subcommittees, executive agencies, and courts make most of the significant decisions, all under the influence of interested constituencies (both industry and environmentalists) and in the absence of broader accountability.²⁰⁷ The organized economic and ideological interest groups crowd out more disinterested or general notions of the public good. In essence, the public good Madison envisioned being generated by a broad, national perspective is inverted by the "micro-politics" of the federal agency-congressional subcommittee-interest group arrangement.²⁰⁸ Professor Stewart has described this tripartite arrangement as the "iron triangle."²⁰⁹

In addition to interest group control, Professor Sunstein has noted that the centralizing effect of federal command and control strategies leads to a diminished role for states and localities, thus further excluding citizen participation in environmental decisionmaking.²¹⁰ Sunstein has noted that some worker safety and environmental issues can best be resolved by workers and local community participants in order "to promote more engagement with governmental affairs."²¹¹ He has suggested setting national performance standards as a "floor" while permitting states

²⁰⁶ See, e.g., Sunstein, *Administrative Substance*, *supra* note 38, at 607.

²⁰⁷ See Stewart, *Madison's Nightmare*, *supra* note 19, at 341-42.

²⁰⁸ According to Professor Stewart, the structural protections of the constitutional design have been superseded by this "new political system." *Id.* at 340, 342. This modern form of regulatory factionalism is not limited to environmental law, but extends to a wide range of fields that involve complex command and control regulation. *Id.*

²⁰⁹ *Id.* at 341-42; Ackerman & Stewart, *Reforming Environmental Law: The Democratic Case*, *supra* note 13, at 191; see also Easterbrook, *Madison's Vision*, *supra* note 195, at 1335 (maintaining that the extended rulemaking proceedings of the Administrative Procedure Act combined with congressional oversight hearings "reduce agency space and therefore augment the relative power of faction").

²¹⁰ See Sunstein, *Democratizing America*, *supra* note 26, at 971.

²¹¹ *Id.*

flexibility to take differing regulatory approaches, so long as the floor is met.

For the most part, however, the solutions posed by the democracy theorists have been market trading systems.²¹² In their view, the process of identifying acceptable levels of pollution on which to base rights to pollute, the starting point of a market trading system, will be much more amenable to democratic discourse and to decentralized decisionmaking than the debates over technology standards that have dominated enactment and implementation of the command and control statutes.²¹³ As discussed in Part VI, however, the suggestion of market trading mechanisms as the logical cure for the democracy deficit may be selling the concept of ends-based approaches short.²¹⁴

C. *The Fading Paradigm*

Regardless of whether one accepts the myriad economic, environmental, and democracy criticisms just outlined, it is clear that although the command and control system is the principal implementing mechanism of environmental law, it is no longer the dominant paradigm for environmental law reform efforts. A number of commentators have pointed out that command and control measures have achieved greater environmental gains than other approaches,²¹⁵ but the command and control approach has not provided the intellectual framework for recent reform proposals.²¹⁶ As Part III will demonstrate, despite a

²¹² See, e.g., *id.* at 949; see also Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11.

²¹³ This scholarship has suggested that market mechanisms, in addition to addressing the economic inefficiencies of the command and control system, provide an opportunity to address the democracy deficit by forcing decision-making away from technology standards and toward the more accessible issues of emission reductions or rates of emission reductions.

²¹⁴ In addition, as Professor Heinzerling has noted in a recent analysis of the debate over the Clean Air Act Amendments of 1990, it is not at all clear that a full debate over environmental ends will occur when Congress enacts legislation to authorize market trading. Heinzerling, *supra* note 13, at 303.

²¹⁵ See, e.g., Jeffrey M. Gaba, *Federal Supervision of State Water Quality Standards Under the Clean Water Act*, 36 VAND. L. REV. 1167 (1983); Houck, *Of Bats, Birds and B-A-T*, *supra* note 184, at 403; Shapiro & McGarity, *supra* note 184; Latin, *supra* note 101, at 1304-09.

²¹⁶ See, e.g., Farber, *supra* note 8, at 1296 (stating that "it is time to explore new approaches to regulation").

recent outpouring of reform proposals, articles in the academic literature, and bills before Congress, few propose to increase the use of command and control measures to address the emerging second generation environmental problems. Much more common are suggestions to replace or restrict the reach of the existing command and control system.

III. THE REFORM PROPOSALS

A. *Market Approaches*

In response to the high costs and other failings of the command and control system, support for market approaches has grown in the past two decades. Advocates have proposed to reduce government regulation by using tradeable pollution rights, green taxes, and other means of enabling the market to serve as the mechanism for reaching desired environmental outcomes.²¹⁷ The advocates of market approaches have touted the economic efficiencies to be gained by application of market mechanisms to environmental problems.

Market approaches have been used by the EPA for more than a decade. These approaches have produced cost savings in several Clean Air Act programs, including bubbling and trade-off approaches,²¹⁸ as well as the phase-down of leaded gasoline.²¹⁹ More recently, Congress

²¹⁷ Market mechanisms have been advocated by a number of authors and policymakers. See, e.g., Ackerman & Stewart, *Reforming Environmental Law: The Democratic Case*, *supra* note 13, at 171; Elliott et al., *supra* note 90. See generally Robert H. Hahn & Gordon L. Hester, *Where Did All the Markets Go? An Analysis of EPA's Emissions Trading Program*, 6 YALE J. ON REG. 109 (1989) (discussing the need to analyze the multiple impacts of emissions trading); Susan Rose-Ackerman, *Market Models for Water Pollution Control: Their Strengths and Weaknesses*, 25 PUB. POL'Y 383 (1977) [hereinafter Rose-Ackerman, *Market Models*] (contrasting the market approaches of effluent charges and pollution rights).

²¹⁸ See, e.g., Richard Stewart, *Economics, Environment, and the Limits of Legal Control*, 9 HARV. ENVTL. L. REV. 1, 12-14 (1985); see also *Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984); U.S. Environmental Protection Agency, *Emissions Trading Policy Statement*, 51 Fed. Reg. 43,814 (1986).

²¹⁹ See, e.g., Ackerman & Stewart, *Reforming Environmental Law*, *supra*

expanded the use of market approaches by adopting a scheme for marketable sulfur dioxide allowances in the 1990 Clean Air Act Amendments.²²⁰ In California, the South Coast Air Quality Management District recently developed a regional air emissions trading scheme called the RECLAIM program.²²¹ The Clinton Administration also has advocated extending market systems to additional air and water pollution control programs.²²²

The growth of market approaches has been somewhat limited, however, and the prospects for expanding market approaches are uncertain, at least in part because of the criticisms they have generated.²²³ Market mechanisms have been criticized on a number of fronts²²⁴ and have been viewed skeptically by many environmental

note 11, at 1348-49 (estimating the savings of the lead phase-down to be in the hundreds of millions of dollars) (citing U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF POLICY PLANNING AND EVALUATION, COSTS AND BENEFITS OF REDUCING LEAD IN GASOLINE: FINAL REGULATORY IMPACT ANALYSIS (1985)).

²²⁰ See subchapter IV-A of the Clean Air Act Amendments of 1990, Pub. L. 101-549, 104 Stat. 2399 (codified as amended at 42 U.S.C. §§ 7651-7651(o) (1994)). The flexibility provided by the acid rain allowance trading program reduced initial acid rain emissions control costs by \$200 million, according to one study. See *Regulatory Reform of Title IV Responsible for Lowering Cost of SO₂ Emission Control*, Daily Env't Rep. (BNA) A-9 (Oct. 5, 1995).

²²¹ See Alexandra Teitz, *Assessing Point Source Discharge in Permit Trading: Controlling Selenium Discharges to the San Francisco Bay Estuary*, 21 ECOLOGY L.Q. 79, 86-87 (1994).

²²² See *Clinton Plan Sets Program to Lift Rules Burdening Those Who Exceed Standards*, Daily Env't Rep. (BNA) D-3 (Mar. 17, 1995); Alec Zacaroli, *Greater Role Sought for Emissions Trading in Environmental Regulation*, 26 Env't Rep. (BNA) 331 (June 9, 1995).

²²³ See, e.g., Hahn & Hester, *supra* note 217, at 6-9; Sunstein, *Democratizing America*, *supra* note 26, at 968 (describing the use of one Clean Air Act market program as "quite limited").

²²⁴ See, e.g., Latin, *supra* note 101, at 1270-71; Sunstein, *Administrative Substance*, *supra* note 38, at 636-37; see also STEVEN BREYER, REGULATION AND ITS REFORM 171-74 (1982); Jerry Mashaw, *Imagining the Past; Remembering the Future*, 1991 DUKE L.J. 711, 721-23; Joel A. Mintz, *Economic Reform of Environmental Protection: A Brief Comment on a Recent Debate*, 15 HARV. ENVTL. L. REV. 149, 152-54 (1991). See generally Shapiro & McGarity, *supra* note 184 (critiquing Sunstein's market-based approach in favor of BAT regulation).

groups.²²⁵ Critics have maintained that few empirical studies support the efficacy of market mechanisms in the environmental area,²²⁶ that market mechanisms will sacrifice environmental protection,²²⁷ and that widespread application of market mechanisms is not feasible.²²⁸

The strongest criticism may be that creating tradeable rights to pollute “commodifies” interests that some argue should not be commodified.²²⁹ In a related view, creation of tradeable rights to pollute would sanction the emission of pollutants, which some consider to be an improper or immoral act.²³⁰ Similarly, several commentators have maintained that the rhetoric of the market model legitimizes rights to pollute and therefore undercuts environmental values.²³¹ Although market

²²⁵ The principal exception is the Environmental Defense Fund. *See, e.g.,* Robert W. Hahn, *United States Environmental Policy: Past, Present and Future*, 34 NAT. RESOURCES J. 305, 332 (1994).

²²⁶ *See* Farber, *supra* note 8, at 1278, 1290 (“Until these studies [of the efficacy of market approaches] have been done, we should proceed cautiously in replacing conventional regulation with incentive schemes.”).

²²⁷ *See, e.g.,* Latin, *supra* note 101, at 1271.

²²⁸ *See* Houck, *Risk Management*, *supra* note 175, at 8-10.

²²⁹ *See generally* Margaret J. Radin, *Market-Inalienability*, 100 HARV. L. REV. 1849 (1987) (discussing justifications for market inalienability).

²³⁰ *See generally* MARK SAGOFF, *THE ECONOMY OF THE EARTH: PHILOSOPHY, LAW AND THE ENVIRONMENT* (1988); Mark Sagoff, *Economic Theory and Environmental Law*, 79 MICH. L. REV. 1393 (1981). The largely undiscussed distinction between normative and utilitarian approaches to environmental protection has a tremendous impact on the implementation and reform of environmental law. *See, e.g.,* William H. Ruckelshaus, *Stopping the Pendulum*, ENVTL. F., Nov./Dec. 1995, at 25 (describing the normative approach as “quasi-religion”).

²³¹ For a discussion of the concern about the rhetoric of rights to pollute, see Margaret J. Radin, *Compensation and Commensurability*, 1993 DUKE L.J. 56, 58; Radin, *supra* note 229, at 1849 (examining “commodification” of personhood and the impact of market rhetoric). *See generally* Frances E. Olsen, *The Family and the Market: A Study of Ideology and Legal Reform*, 96 HARV. L. REV. 1497 (1983). *But see* Carol Rose, *Environmental Faust Succumbs to the Temptations of Economic Mephistopheles, or, Value by Any Other Name is Preference*, 87 MICH. L. REV. 1631 (1989) (book review) (reviewing MARK SAGOFF, *THE ECONOMY OF THE EARTH* (1988)). For a review of the commonality of views about the expressive function of law among environmental ethicists, civic republicans, and commodification theorists, see generally Jane B. Barron &

mechanisms ultimately may prove successful, these critics have asserted that the market approach does not provide a basis for environmental aspirations.

Perhaps because of these criticisms, the movement toward market mechanisms in environmental law has been slow. After more than two decades of proposals and vigorous debate, the acid rain provisions of the 1990 Clean Air Act Amendments are the only express statutory market provisions in the command and control system. Agency use of trading mechanisms through administrative measures has been more widespread, but has not extended beyond the programs discussed above.²³² At the same time, many market incentives are largely unexplored by policy-makers or have not been attempted broadly, such as a comprehensive national air emissions trading program, global CO₂ trading, and various tax incentives and deposit schemes.²³³

The most important barrier to the expansion of market mechanisms may be that creating tradeable rights to pollute requires the establishment of property rights in emissions. Establishment of property rights in emissions requires quantification of acceptable levels of emissions. In turn, this requires an understanding of the impact of emissions on ambient conditions. By relying on BAT, the current environmental regulatory system has not created incentives to generate comprehensive inventories of emissions levels for many pollutants or for many media, or comprehensive studies of the impacts of these emissions on ambient environmental conditions. Moreover, by not creating a clear relationship between allowable emissions levels and desired ambient conditions or other environmental outcomes, the environmental regulatory system has left itself open to skepticism about whether market mechanisms will lead to a cleaner environment, or only to cost savings.

Jeffrey L. Dunoff, *Against Market Rationality: Moral Critiques of Economic Analysis in Legal Theory*, 17 CARDOZO L. REV. 431 (1996).

²³² The EPA has expressed its intention to allow trading of NO_x and VOC air emissions under the Clean Air Act and of water emissions under the Clean Water Act, although some of these trading schemes may require statutory changes. See Bill Clinton & Al Gore, *Reinventing Environmental Regulation*, INSIDE EPA, Mar. 17, 1995, at 1.

²³³ See Sunstein, *Administrative Substance*, *supra* note 38, at 637-39 (discussing emissions trading of carbon dioxide on a global level).

B. Additional Reform Proposals

1. The EPA Reforms

In recent years, reforms to the command and control system have been proposed by the EPA,²³⁴ the states,²³⁵ numerous blue ribbon commissions,²³⁶ and scholars.²³⁷ In addition to its efforts to expand market trading, the EPA has launched a number of non-market efforts to reform the environmental regulatory system. These efforts have covered a wide range of issues, including attempts to gain control of the regulatory agenda, whether through the 1987 and 1990 re-examinations of the environmental agenda based on risk, as discussed above,²³⁸ or through more recent attempts to develop a comprehensive strategic plan

²³⁴ For example, on the federal level, a number of voluntary programs have been developed, such as the "33/50 Program," see U.S. ENVIRONMENTAL PROTECTION AGENCY, SPECIAL PROJECTS OFFICE, THE 33/50 PROGRAM: FORGING AN ALLIANCE FOR POLLUTION PREVENTION (1992); the "Common Sense Initiative," see CAROL M. BROWNER, THE COMMON SENSE INITIATIVE: A NEW GENERATION OF ENVIRONMENTAL PROTECTION (1994) (remarks at Center for National Policy Newsmaker Luncheon, Washington, D.C.); "Project XL," see Regulatory Reinvention (XL) Pilot Projects, 60 Fed. Reg. 27,282 (May 23, 1995); and the "Design for the Environment Program," see U.S. ENVIRONMENTAL PROTECTION AGENCY, THE DESIGN FOR THE ENVIRONMENT PROGRAM: CLEANER TECHNOLOGIES FOR A SAFER FUTURE (1993). Other programs that do not rely on traditional command and control or market trading schemes include the information disclosure required by the Toxic Release Inventory ("TRI"), see 42 U.S.C. § 11022, and disclosure requirements for environmental liabilities under the securities laws, see, e.g., E. Donald Elliott et al., *A Practical Guide to Writing Environmental Disclosures*, 25 *Envtl. L. Rep.* (Envtl. L. Inst.) 10,237 (May 1995).

²³⁵ For examples of state innovations, see *State Roundup — Texas*, Daily *Env't Rep.* (BNA) B-3 (Aug. 29, 1995) (Texas pollution prevention program). See also Robert F. Blomquist, *Government's Role Regarding Industrial Pollution Prevention in the United States*, 29 *GA. L. REV.* 349, 414 (1995) (discussing the Massachusetts "Blackstone" project).

²³⁶ See, e.g., PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT: A NEW CONSENSUS FOR PROSPERITY, OPPORTUNITY AND A HEALTHY ENVIRONMENT (1996). See generally NAPA REPORT, *supra* note 57.

²³⁷ Proposals to date include "civic environmentalism," see JOHN, *supra* note 163, at 10, and "integrated thoughtways," see Guruswamy, *supra* note 185, at 492-514.

²³⁸ See *supra* notes 177-78 and accompanying text.

for the EPA.²³⁹ The reform efforts also have included structural changes, such as adding an EPA international office, and restructuring enforcement elements to increase emphasis on compliance assurance and economic sector-based enforcement.²⁴⁰

The EPA efforts also have included attempts to supplement the statutory command and control requirements with new, voluntary compliance tracks. These programs have included numerous voluntary emission reduction programs,²⁴¹ as well as efforts to re-examine regulatory requirements on a sector-by-sector or facility-specific basis.²⁴² Despite these efforts, the statutory imperatives of the command and control system continue to drive the great majority of the EPA's resources and programs.²⁴³

2. *Private Initiatives and Academia*

The reform proposals advanced by blue ribbon commissions and in the academic literature also have ranged widely. Market trading approaches were advocated in the academic literature more than a decade before the 1990 Clean Air Amendments established the first statutory trading scheme.²⁴⁴ More recently, private initiatives and academic proposals have included developing alternative environmental performance tracks,²⁴⁵ returning decisionmaking to the states²⁴⁶ or local communities,²⁴⁷ increasing reliance on public information to stimulate compliance,²⁴⁸ and returning to common law reme-

²³⁹ See U.S. ENVIRONMENTAL PROTECTION AGENCY, A NEW GENERATION OF ENVIRONMENTAL PROTECTION: A SUMMARY OF EPA'S FIVE-YEAR STRATEGIC PLAN (1994) (Executive Summary).

²⁴⁰ See, e.g., U.S. ENVIRONMENTAL PROTECTION AGENCY, ENFORCEMENT REORGANIZATION PLAN (1993); see also Stahl, *supra* note 35.

²⁴¹ See *supra* note 234.

²⁴² See, e.g., U.S. Environmental Protection Agency, Common Sense Initiative, 59 Fed. Reg. 55,117 (Nov. 3, 1994).

²⁴³ See NAPA REPORT, *supra* note 57, at 11-12.

²⁴⁴ See generally Rose-Ackerman, *Market Models*, *supra* note 217.

²⁴⁵ See, e.g., HAMMOND ET AL., ENVIRONMENTAL INDICATORS, *supra* note 14, at 11-16.

²⁴⁶ For a review of efforts to return environmental decisionmaking to the states, see Pendergrass, *supra* note 117, at 8.

²⁴⁷ See generally JOHN, *supra* note 163 (advocating an increased role for local communities).

²⁴⁸ See, e.g., Christopher L. Bell, *ISO 14001: Application of International*

dies.²⁴⁹ These proposals often have included recommendations to replace the multitude of environmental laws with a single comprehensive statute.²⁵⁰

Several recent proposals have emphasized the potential importance of environmental outcomes or performance indicators.²⁵¹ These proposals have emphasized the importance of developing environmental criteria to evaluate the state of the environment and the performance of the environmental regulatory system.

C. *Environmental Gridlock: Prospects for Reform*

Despite the flurry of reform activity, environmental law reform remains in gridlock. The environmental debate is extremely polarized.²⁵² No major environmental legislation was enacted during the five year period from 1991 to 1995.²⁵³ Although amendments to food safety and drinking water laws passed in 1996, more fundamental legislative changes did not move. Moreover, the regulatory reform initiatives

Environmental Management Systems Standards in the United States, 25 *Envtl. L. Rep. (Envtl. L. Inst.)* 10,678, 10,683 (Dec. 1995) (reviewing environmental compliance strategies based on the ISO 14000 environmental management standards).

²⁴⁹ Many commentators have noted that early cases demonstrated that the common law was inadequate to protect the environment. Cases commonly cited for this proposition include *Pennsylvania Coal Co. v. Sanderson*, 6 A. 453, 459 (Pa. 1886), *limited by Commonwealth v. Barnes & Tucker Co.*, 319 A.2d 871 (Pa. 1974).

²⁵⁰ See, e.g., Ruckelshaus, *supra* note 230, at 28-29; William Reilly, *The Future of Environmental Law*, 6 *YALE J. ON REG.* 351, 353 (1989) (proposing a single organic statute); Guruswamy, *supra* note 185, at 516-35; CONSERVATION FOUNDATION, *supra* note 30; see also *EPA Convenes Talks in Congress on Integration of Environmental Statutes*, *INSIDE EPA*, July 5, 1996, at 12.

²⁵¹ See, e.g., PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, *supra* note 236; NATIONAL ENVIRONMENTAL POLICY INSTITUTE, *REINVENTING THE VEHICLE FOR ENVIRONMENTAL MANAGEMENT (First Phase Report)* (1995); see also *Yale Launches Effort to Redefine Future of Environmental Policy*, *INSIDE EPA*, Apr. 19, 1996, at 18 (noting that a half dozen reform efforts were underway in 1996).

²⁵² See *infra* Part III.C.1 (notes 257-61 and accompanying text).

²⁵³ The most significant new environmental laws enacted after 1990 are the Safe Drinking Water Act Amendments of 1996, Pub. L. No. 104-182, 110 Stat. 1613, and the Food Quality Protection Act of 1996, Pub. L. No. 104-170, 110 Stat. 1489.

proposed in recent years are remarkably similar to proposals made more than a decade before.²⁵⁴ As opposed to linear development, commentators have noted a swinging pendulum of legislative and regulatory activity extending back to the late 1960s.²⁵⁵

To date, the proposed environmental law reforms have resulted in several new EPA programs and an increased emphasis on emissions trading and state delegation, but they have had a limited impact on the overall regulatory system. Although many of the proposed reforms and new programs include promising approaches to certain environmental problems, none has yet emerged with the broad applicability or support necessary to replace the command and control approach.²⁵⁶

1. *The Environmental Reform Debate*

Why have reforms bogged down? One reason is that the environmental reform debate is dysfunctional. Commentaries about the public discourse on the environment routinely note that it is polarized and that symbolic issues dominate.²⁵⁷ The public is generally disengaged. Although public support for a clean environment is high, there is a great deal of public dislike of government intrusion and antipathy toward the costs of environmental protection activities.²⁵⁸ A broad public aspiration

²⁵⁴ Compare the legislation cited *supra* note 2 with Schoenbrod, *supra* note 17, at 823.

²⁵⁵ See, e.g., Ruckelshaus, *supra* note 230, at 25-29. This pendulum in fact can be traced back even further, perhaps even to the late nineteenth century, in the natural resource preservation area. See, e.g., SUSTAINABLE ENVIRONMENTAL LAW, *supra* note 31, at 18-19. This phenomenon also has been described as a "policy seesaw." See Stewart, *Controlling Environmental Risks*, *supra* note 148, at 154.

²⁵⁶ New initiatives have been criticized for not achieving sufficient reductions, for difficulties in monitoring compliance, and for an absence of transparency. See generally Susan Rose-Ackerman, *American Administrative Law Under Siege: Is Germany a Model?*, 107 HARV. L. REV. 1279 (1994) [hereinafter Rose-Ackerman, *American Administrative Law*].

²⁵⁷ See, e.g., Pedersen, "Protecting the Environment," *supra* note 26, at 978 (noting that "[t]he complexity of environmental issues and the short attention span of the media allow fake claims of victory and disaster to be taken — all too often — at face value"). The dysfunctional aspects of the debate are not new. See Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1352 (noting in 1985 the need for "a more democratic, and more enlightened, dialogue on the nature of America's evolving environmental objectives").

²⁵⁸ See, e.g., Paul Taylor, *Impasse Mirrors Country's Ambivalence on Modern*

for the environment that incorporates these disparate lines of thought has not developed.

In the current environmental reform debate, each participant has incentives to extract narrow benefits without accounting for the impact of its position on the desired state of the environment, not to mention the corresponding economic or social impacts. Environmentalists have incentives to gain media attention, raise funds, and increase membership with warnings of disaster. They are not forced to identify the inherent environmental, social, or economic trade-offs in their positions, or to focus public attention on second generation sources. Industry has incentives to overstate the costs and other burdens of additional emission reductions in an effort to avoid costs altogether, and has incentives to shift costs to other economic sectors if the costs cannot be avoided entirely. Industry also is not forced to identify the environmental, economic, and social trade-offs that arise from avoiding or shifting compliance costs.

In the debate, the media and the general public have little basis from which to evaluate the environmental claims of environmentalists and industry, or to weigh them against other economic or social impacts.²⁵⁹ Consequently, environmental news typically is characterized in terms of polarized controversies involving the environment and the economy. As a substitute for an independent analysis of the issues, perspectives from environmental activists are set in opposition to business interests. In these stories, decisions are either pro-environment or pro-business. The positions of the decisionmakers are framed by the polar opponents on both sides.

The executive and legislative branches at the federal and state levels also have mixed incentives in the environmental debate. These incentives include the temptation to make unrealistic promises that may never be implemented in practice.²⁶⁰ Both branches face difficulties resisting pressure from environmentalists and business interests.²⁶¹ The product

Role of Government, WASH. POST, Nov. 19, 1995, at A9 (noting that "Americans are of two minds about the role of their government. They want its protections but not its intrusions, its benefits but not its costs.").

²⁵⁹ See, e.g., Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1353 (noting that "the BAT system focuses congressional debate . . . upon arcane and technological and definitional questions which rapidly outstrip the time and energy that most politicians and citizens are willing to spend on environmental matters").

²⁶⁰ See, e.g., Sunstein, *Paradoxes*, *supra* note 7, at 407.

²⁶¹ This problem is exacerbated by differences in perceptions of risk. To take

of this tension is the shifting, crisis-based environmental agenda discussed in Part II. Regardless of its causes, the shifting agenda prevents government from focusing on the most important long-term environmental problems, as well as creating uncertainty for the regulated community.

*2. Environmental Law Reform:
Early Lessons and False Choices*

A second reason for the slow pace of reform is that the participants in the environmental law reform efforts learned several false lessons from the experience of the 1960s and 1970s. These lessons, in turn, create several false choices that block efforts to reconceptualize the regulatory framework.

*a. Implementing Mechanisms:
Technology Standards or Ambient Standards*

The first such lesson presumes that one of two implementing mechanisms for environmental law must be selected: technology standards or ambient standards. The lesson of the early development of environmental laws, and the received wisdom of the academic literature, suggests that if technology requirements are selected, certainty and national uniformity regarding emission controls will be achieved, but high costs, inflexibility, and intrusiveness will result.²⁶² At the same time, the experience of state adoption and enforcement of ambient standards prior to 1970 and the limited success of non-BAT provisions in post-1970 environmental statutes suggest that if ambient standards are selected, the

only one example, numerous studies suggest that public and expert perceptions of the environmental and human health risks from toxic waste sites differ greatly. Toxic waste sites rank far higher on lists of public concern than on experts' lists. *See, e.g.*, U.S. ENVIRONMENTAL PROTECTION AGENCY, UNFINISHED BUSINESS: A COMPARABLE ASSESSMENT OF ENVIRONMENTAL PROBLEMS (1987). In this situation, if the environmental regulatory system is responsive to local public concerns, it will generate environmental actions that are misdirected in the view of environmental experts. *See* Farber, *supra* note 8, at 1285. Rather than an additional means of assessing and prioritizing among national objectives, risk techniques often become a mechanism in the environmental debate for meeting public demand for action while delegating difficult choices to, and criticizing, both the implementing agencies and the command and control regulatory system.

²⁶² *See, e.g.*, Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1333.

standards will be difficult to administer and enforce.²⁶³ Consequently, the lessons of the early evolution of environmental law pose a difficult choice: choose ambient standards and sacrifice the environment or choose technology standards and sacrifice economic efficiency.

The environmental law reform debate rarely focuses on whether this is in fact now a false choice: whether it is in fact necessary to choose between technology standards and ambient standards. The debate rarely addresses whether ambient conditions can be identified and used not as an implementing mechanism, but as a means of encouraging the development of more effective implementing mechanisms. Nor does the debate address whether technology standards, at least in the short-term, can provide an effective floor in such a system without perpetuating undue economic inefficiencies.

*b. Decisionmaking:
Congress or the EPA*

The second false lesson from the 1960s and 1970s concerns whether Congress or the EPA should make implementation decisions. Complex decisions are inherent in any environmental regulatory system, ranging from what environmental conditions are desirable, to what emissions control technologies are available, to what costs are acceptable, to who should bear those costs. The BAT-driven command and control approach requires decisions about the most technically narrow and impenetrable of those decisions: which control technologies are appropriate for which specific industries. The environmental law reform efforts to date have largely assumed that resolution of these difficult policy judgments requires Congress to delegate authority to the EPA to develop the specific implementing mechanisms for environmental protection, such as the BAT requirements of the command and control approach.²⁶⁴ At the same time, the experience of the 1970s and 1980s demonstrates that the

²⁶³ See Houck, *Of Bats, Birds, and B-A-T*, *supra* note 184, at 403; see also *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1042 (D.C. Cir. 1978) (noting Congress's concern about "administrative flexibility" in the Clean Water Act); Latin, *supra* note 101, at 1267.

²⁶⁴ See, e.g., Latin, *supra* note 101, at 1267. Moreover, even if it were feasible for Congress to set specific statutory BAT standards, selecting technologies in a statute, rather than delegating the selection of technologies to the EPA, could freeze the technologies in law and thus exacerbate the cost, inefficiency, and inflexibility problems of BAT statutes.

delegation to the EPA of difficult BAT implementation decisions leads to delays, litigation, and limited citizen participation.

Thus, the lessons from the development of environmental law have produced a second difficult choice. The environmental reform debate rarely addresses whether this, too, is a false choice: whether, on the one hand, Congress must delegate difficult decisions to the EPA and in so doing not only fail to resolve many important issues but also create the administrative delays and other problems that arise from broad delegation, or, on the other hand, select only broad ambient goals and sacrifice the environmental improvements that have arisen from the BAT approach.

D. A New Choice

Is there a method of ensuring enforceable environmental requirements *without* prescribing the environmental implementing mechanism? If technology standards are not the only possible implementing mechanism, the choice may not be only whether Congress or the EPA is better suited to picking technologies. Instead, the choice may include whether Congress is able to set desired ambient conditions and to resolve a number of the drawbacks of ambient standards by also identifying and allocating the corresponding emission reduction responsibilities. This choice may enable the EPA and the states to avoid the nearly impossible task of both establishing desired environmental conditions and implicitly allocating the corresponding emission reduction responsibilities through rulemakings and permits. Instead, this choice would involve creating a process in which Congress establishes desired environmental conditions and allocates the corresponding responsibilities, thus enabling the EPA and the states to administer and enforce these statutory emission reduction responsibilities.²⁶⁵

The hurdle of feasibility, among other potential objections, is obviously extremely large. Yet the Netherlands appears to have developed such a new approach by taking two fundamental steps: (1) addressing the environmental debate problem with a re-examination of the state of the environment and of the broad national goal; and (2) addressing the

²⁶⁵ Market trading schemes may provide insight on these questions and may permit a somewhat more reasoned role for Congress in determining emissions allowances; but as discussed in Part II (notes 86-216 and accompanying text), these approaches have encountered substantial criticisms, and few major new statutory trading schemes are on the horizon. *See, e.g.,* Ackerman & Stewart, *Reforming Environmental Law: The Democratic Case*, *supra* note 13, at 171; Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1333.

implementation problem not by just prescribing particular emissions technologies (or specific allowance trading mechanisms), but by identifying desired ambient environmental conditions and the emission reductions necessary to achieve them, as well as by allocating the emission reductions among all major economic sectors and geographic regions.

IV. THE EXPERIENCE ABROAD

Several countries, including the Netherlands, New Zealand, and others,²⁶⁶ in recent years have turned the command and control approach on its head. Without abandoning the use of BAT requirements in many circumstances, these countries have used BAT not as the determinant of environmental conditions, but as one tool for achieving environmental conditions that are identified and apportioned through a broad re-examination of the nation's environmental goals. Although the distinction may appear to be a fine one, its implications for the environmental law reform debate and for the prospects of achieving environmental ends are substantial.

A. *The Netherlands*

The Dutch process is the most comprehensive and innovative example of the new ends-based approaches, and it provides an example of the

²⁶⁶ See New Zealand Ministry for the Environment, *Environment 2010 Strategy: A Statement of the Government's Strategy on the Environment* (Oct. 1994). Additional countries that have developed or are developing systems similar to those of the Netherlands and New Zealand include Austria, Canada, and Singapore. See, e.g., *Austria Proposes Ambitious National Environmental Plan*, ENVIRONMENT WATCH WESTERN EUROPE 1, 1-2 (Sept. 6, 1996). Commentators writing about these systems have sometimes described them as "Green Plans." See, e.g., JOHNSON, *supra* note 14. This description may not fully characterize the overall impact of these systems, however. First, although they are "green" in the sense that they have environmental protection as an underlying objective, they typically incorporate or acknowledge economic and other social objectives as well. Second, although they involve "plans" as discussed in the review of the Dutch planning process in this Article, they need not involve invasive, comprehensive social planning along European lines. Indeed, although comprehensive thinking is required at the outset, a principal long-term benefit of these systems may be their ability to create incentives for self-implementing or voluntary compliance systems and, thus, to reduce the government's role in directing the private sector.

strengths and weaknesses of these systems. As discussed later in this Part,²⁶⁷ differences between the Dutch and American legal systems, culture, economy, and physical landscape suggest that adoption of the Dutch approach may not be possible or even advisable in the United States. Nonetheless, the underlying concepts of the Dutch approach are valuable for examining the environmental regulatory system and reform efforts in the United States.

1. *Background*

The initial development of Dutch environmental law followed the course of the United States and many other western democracies. In the 1970s, a number of media-specific laws and regulations were put in place.²⁶⁸ The national environmental agency (the current Directorate General for Environmental Management of the Ministry of Housing, Spatial Planning, and the Environment or "Ministry of VROM"²⁶⁹) also was structured along media-specific lines.

In the 1980s, two new approaches emerged. In addition to traditional media-based laws with a focus on air, water, and land, and substance-based laws with a focus on toxics, these new approaches cut across traditional lines and set the stage for the later efforts. The first new approach was based on "themes," eight significant problem areas that the Dutch attempted to attack through multi-media strategies. The environmental themes are climate change, acidification, eutrophication, dispersion of hazardous substances, waste disposal, local nuisance, water depletion, and resource management.²⁷⁰

The second new approach focused on "target groups," economic sectors that were identified as major sources of environmental degradation.²⁷¹ The target groups are agriculture, industry, refineries, retail

²⁶⁷ See *infra* Part IV.B (notes 318-22 and accompanying text).

²⁶⁸ See generally Van Zijst, *supra* note 14, at 13.

²⁶⁹ The VROM acronym derives from the Dutch title for the ministry: Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer.

²⁷⁰ See Ministry of VROM, *Towards a Sustainable Netherlands, Environmental Policy In Action No. 6: Achieving Integration 4* (1994) [hereinafter *Towards a Sustainable Netherlands, Environmental Policy in Action No. 6*].

²⁷¹ The target group approach was adopted in the Indicative Multi-year Environmental Management Programme 1986-1990, a five-year environmental program that adopted a source-reduction strategy for target groups. See Ministry of VROM, *Second National Environmental Policy Plan 103* (1994) [hereinafter *NEPP2*]. This five-year program identified the defining characteristics of target

trade, transport, consumers, the construction industry, the waste disposal industry, the drinking water supply industry, sewage and waste water treatment, and research institutions.²⁷² Although a focus on potential sources is common to all environmental regimes, the new Dutch approach was unusual in its attempt to achieve compliance by apportioning responsibility to entire economic sectors, and by broadening the effort beyond industry. Similar attempts to circumvent the unintended effects of media-specific approaches were developed in the United States and elsewhere, but in the Netherlands these strategies laid the foundation for a much more novel approach that began in the late 1980s.

2. *New Approach*

Beginning in the late 1980s, environmental law reform efforts in the Netherlands focused on developing and implementing a comprehensive environmental strategy around the themes and target groups. The effort has proceeded in several steps: (1) evaluation of the state of the environment; (2) selection of an environmental goal; (3) allocation of emission reductions; (4) development of implementing mechanisms; and (5) periodic review.

a. *Evaluation of the State of the Environment*

At the request of the Minister of VROM, in 1987 and 1988 an independent national environmental research institute, the National Institute of Public Health and Environmental Protection (the "RIVM"²⁷³), surveyed trends in the state of the Dutch environment and the likely state of the environment in one generation (twenty to twenty-five years). The RIVM selected 1985 as the base year, and 2010 as the target year for the survey.²⁷⁴

groups: (1) those groups that were a "major source of pollution"; (2) those groups that were "a major contributor to the national or international economy, larger and national in scope (than other sectors)"; or (3) those groups for which the "central government is the authorized permitting authority." *Id.* at 103.

²⁷² *See id.*

²⁷³ The RIVM acronym derives from the Dutch name for the institute: Riksinstituut Voor Volksgezondheid En Milieuhygiene.

²⁷⁴ *See* ENVIRONMENTAL FORECASTING BUREAU, CONCERN FOR TOMORROW: A NATIONAL ENVIRONMENTAL SURVEY 1985-2010 (Rob Maas ed., 1989) [hereinafter CONCERN FOR TOMORROW].

To organize the study, the RIVM examined emissions levels affecting the eight key environmental indicators — the “themes” discussed above. The RIVM also focused on five levels or “scales of occurrence”: global, continental, fluvial (river systems), regional, and local. The study examined a variety of future scenarios for the eight theme areas at the five scales of occurrence, based on different projected levels of economic growth, energy consumption, population growth, vehicle kilometers travelled, and other factors.²⁷⁵ The study focused on particular theme area problems that were most likely to occur at certain scales of occurrence (e.g., acidification was examined on the continental scale of occurrence).

The study was published in the 1988 report *Concern for Tomorrow*.²⁷⁶ It concluded that despite substantial progress since the early 1970s, the then-current environmental regulatory approaches would not achieve sustainability within one generation, by 2010, and in some cases would not prevent significant deterioration. For example, on a continental level, the study identified acidification and low-level ozone as two of the most significant theme problems. To achieve sustainability, or avoid “the most serious damage” to the environment from acidification, the study projected that reductions of 90% for SO₂ and 70% for NO_x would be required from 1980 levels. Similarly, to address damage from ozone, reductions in NO_x and volatile organic compounds of 70% to 90% from 1980 levels would be required.²⁷⁷ In both cases, the study indicated the percentage reductions that appeared feasible with then-current technologies and regulatory approaches (e.g., 80% for SO₂, 55% to 60% for NO_x, 65% to 75% for NO₃, and 50% for VOCs), and noted that a gap existed between the currently feasible reductions and the levels necessary to address the environmental harms.²⁷⁸

For waterbodies (the “fluvial” scale analysis), the study examined eutrophication, dispersion of hazardous substances, and several other theme areas. It concluded that discharges of nitrogen and phosphorous would need to be reduced by 75% to avoid

²⁷⁵ *Id.* at xvii.

²⁷⁶ The principal conclusion of the study was that despite progress, “a further deterioration of [Dutch environmental] quality will certainly occur if present trends persist.” Postponing action will result in environmental and economic risk. *Id.* at preface.

²⁷⁷ *See id.* at xvii.

²⁷⁸ *See id.*

eutrophication in several key areas. Similar conclusions were drawn for dispersion of five substances of greatest concern in water and sediment — cadmium, copper, lindane, benzo(a)pyrene, and certain phthalates.

In some cases, the study concluded that existing measures appeared to be sufficient. For example, the controls on chlorofluorocarbons appeared to address its global-level contribution to stratospheric ozone depletion. On a regional level, planned controls on phosphorous were thought to be adequate to prevent a build up in soils and groundwater, although not to avoid deposition in waterways, as discussed above. The study examined the susceptibility of each distinct geographic area in the Netherlands to the eight theme problems, and reviewed the sources of emissions and costs of control to major economic sectors.²⁷⁹

The study also examined human health impacts.²⁸⁰ It made use of risk assessment techniques, but with an explicit recognition of the limits of risk assessment methodology and the need to consider other factors.²⁸¹ The study also examined the impacts of environmental measures on gross national product (“GNP”). It concluded that planned measures would hold environmental spending at approximately 2% of GNP. Measures to achieve sustainability were projected to increase the figure to between 3% and 3.5% of GNP by 2010. The study also noted that economic benefits would accrue from achieving the sustainability targets but that those benefits could not be quantified.

b. Selection of an Environmental Goal

The *Concern for Tomorrow* report implicitly assumed that the national government would select sustainable development as the premise for

²⁷⁹ See *id.* ch. 10.

²⁸⁰ See *id.* at 314-15.

²⁸¹ See *id.* at 287. The study attempted to make comparisons of environmental risks to other risks, such as lifestyle risks. “In this way, within the limits of uncertainty, some statements can be made about which environmental problems are the most important threat to public health and which kind of regulatory measures can possibly lead to ‘health profit.’” *Id.* The specific conclusions included findings that it is difficult to make quantitative targets for health effects, and that environmental exposures present relatively low risk for death, but higher risk for chronic effects. The study also generated a list of the most important types of actions identified (e.g., reduction of indoor and outdoor air pollution, radon exposure reduction, UV light exposure, cadmium emissions, noise pollution). See *id.* at 314-15.

environmental management efforts. The concept of environmentally sustainable development within a generation as an international goal was proposed in 1987 by the World Commission on Environment and Development, known as the Brundtland Commission.²⁸² This sustainable development concept has received substantial support internationally, including adoption at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro.²⁸³ The concept has received less attention in the United States.²⁸⁴

The adoption of national environmental goals in the Netherlands appears not to have been undertaken lightly. The Dutch conducted a vigorous debate in various public fora and in Parliament over the national goals for the environment.²⁸⁵ A National Environmental Policy Plan ("NEPP") was prepared by the Ministry of VROM in 1989²⁸⁶ and was submitted for debate in Parliament.²⁸⁷ In the NEPP, an initial national goal of achieving sustainable development was expressed as producing "development that attends to the needs of the present without compromising the ability of future generations to meet their own

²⁸² See UNITED NATIONS, OUR COMMON FUTURE, *supra* note 87.

²⁸³ See Overview of Agenda 21 and Implementation Mechanisms: Report of the Secretary-General of the Conference, U.N. GAOR Preparatory Comm. for the U.N. Conference on Environment and Development, 4th Plen. Sess., U.N. Doc. A/Conf. 151/PC/100/Add.1 (1992). For a discussion of sustainable development on an international level, see, for example, Edith Brown Weiss, *Environmentally Sustainable Competitiveness: A Comment*, 102 YALE L.J. 2123 (1993).

²⁸⁴ The principal exception is the President's Council on Sustainable Development. See generally PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, *supra* note 236.

²⁸⁵ The adoption of a national goal in the Netherlands occurred after substantial national debate. Immediately preceding the release of the *Concern for Tomorrow* report, Holland's Queen Beatrix delivered a state of the nation speech in which she articulated the government's position that environmental improvements were adequate. Shortly thereafter, with the release of the *Concern for Tomorrow* report, the more uncertain long-term status of the environment became clear. As a result, the Queen's holiday message of 1988 expressed substantially more concern for the environment. See JOHNSON, *supra* note 14, at 48-49.

²⁸⁶ Ministry of VROM, National Environmental Policy Plan (1989) [hereinafter NEPP1]. The National Environmental Policy Plans ("NEPPs") (1989, 1990, 1994) are submitted to the Dutch parliament. Provincial, local, water management boards participate in the development of the plans, which are reviewed and updated every four years.

²⁸⁷ See *id.*

needs.”²⁸⁸ The NEPP identified broad emission reduction objectives by geographical area²⁸⁹ and by theme area.²⁹⁰ The debate over the NEPP was vigorous. In fact, the debate over one environmental provision in the NEPP concerning parking subsidies contributed to the fall of the Dutch government in 1989.²⁹¹ After a new election, the NEPP was resubmitted and approved by Parliament.

c. Allocation of Emission Reductions

The identification of quantified emission reduction objectives for themes and geographic areas provided the basis for a third, more radical step. In the NEPP the government established emission reduction targets for major economic sectors (e.g., industry, agriculture, transportation and

²⁸⁸ *Id.* at 7. The NEPP states that “[t]he main objective of environmental management is to preserve the environment’s carrying capacity for the sake of sustainable development.” *Id.* at 15. The sustainable development goal was further defined to focus less on the vague notion of “needs” and more on the concept that each generation should solve the environmental problems that it creates. The NEPP states that “existing problems must be solved within the span of a generation (20 to 25 years) and at the same time the creation of new problems must be prevented.” *Id.* at 75.

²⁸⁹ Geographical area problems (e.g., global and regional scale) were assigned broad percentage reductions of emissions necessary to achieve sustainability for the themes of most concern. For example, a regional level may require 80% to 90% reductions in many emissions, and 70% to 80% reductions in wastes. *See id.* at 15. For geographic levels, quantitative and qualitative objectives were set for the year 2010. *Id.* ch. 4.

²⁹⁰ Quantitative objectives were set for eight themes: (1) climate change (ozone depletion and global warming); (2) acidification (annual emissions ceilings for year 2000 for SO₂, NO_x, ammonia, and VOCs); *see id.* at 132-34; (3) eutrophication (targeted reductions in phosphorus and nitrogen emissions, plus ambient standards); (4) diffusion of substances (toxics and pesticides); (5) waste disposal (hazardous and solid waste); (6) disturbance (noise, odor, and accidents); (7) dehydration (ground water depletion); (8) squandering (resource depletion, e.g., soils and ground water); *see id.* at 23-28.

²⁹¹ The NEPP was submitted to Parliament by the Lubbers government. After Parliament defeated a provision in the plan that would have ended subsidies for automobile commuters, the Lubbers government resigned. This has been called the first time a government has fallen over an environmental issue. *See* JOHNSON, *supra* note 14, at 49. The controversial provision was included in the NEPP draft that was eventually approved by Parliament. *See* NEPP1, *supra* note 286.

consumers).²⁹² The NEPP objectives were based on the “desired quality of the environment.”²⁹³ The national government then apportioned, or “disaggregated,” these emission reductions among the target groups, and, through the NEPP and later actions, further apportioned the emission reductions among subsectors (called “branches,” e.g., the chemical industry, the printing industry).

For example, the NEPP assigned an industry target group the goal of reducing phosphorus emission levels from a 1985 baseline of 15 kilotons to 8 kilotons in 1994, and to 4 kilotons in 2000.²⁹⁴ Similarly, SO₂ emission reduction responsibilities were defined for two industry subsectors as set forth in Table 2:²⁹⁵

TABLE 2

Total Allowable SO ₂ Emissions (in kilotons)		
Year	Refineries	Chemical and Other Industries
1985	95	69
1994	56	45
2000	36	15

The NEPP also set quantitative industry objectives for VOCs and nitrogen discharges, as well as a combination of qualitative and quantitative objectives

²⁹² The target groups are as follows: (1) agriculture; (2) traffic and transport; (3) industry; (4) electricity and gas companies; (5) building trade; (6) consumers; (7) environmental trade; (8) research and educational institutions; (9) societal organizations/environmental organizations. See NEPP1, *supra* note 286. The emission reduction objectives have been updated in a revised version of NEPP1, known as the NEPP Plus, see Ministry of VROM, National Environmental Policy Plan Plus (1990), and in a second plan, the NEPP2, see NEPP2, *supra* note 271. The NEPP2 also reiterated the eight environmental themes, identified based on the “greatest (known) risks presented to human health, animals, plants, goods and land use potential.” Towards a Sustainable Netherlands, Environmental Policy In Action No. 6, *supra* note 270, at 4.

²⁹³ Ministry of VROM, Memorandum on Implementation of Target Group, Environmental Policy of Industry 33 (1990) [hereinafter Memorandum on Implementation of Target Group].

²⁹⁴ See NEPP1, *supra* note 286, at 207.

²⁹⁵ See *id.* at 206.

for a number of other emissions (e.g., percentage reductions for certain “priority substances” or toxics),²⁹⁶ and environmental problems (e.g., “isolate, manage and control” contaminated soils).²⁹⁷

The process by which these emission reduction responsibilities were apportioned among sectors has little parallel to the Administrative Procedure Act notice and comment rulemaking processes familiar in the United States. Emissions objectives for the year 2000 and the year 2010 for industry branches, and in some cases for individual companies, were set through three principal steps.²⁹⁸ The first step involved an emissions inventory at the branch and sub-branch, but not company, level by the Industry Division of the Directorate General for the Environment (“DGE”).²⁹⁹ The second step involved the creation of a matrix identifying emissions from various sectors, based on an evaluation of the branch’s contribution to the environmental theme problems identified in the NEPP, and the selection of “priority branches” to be targeted.³⁰⁰ The Industry Division then created a database by evaluating the sectoral data against the emission reduction targets established by the NEPP.³⁰¹ After consultations with the affected sectors, the DGE then prepared and received comments on sector-by-sector emission reduction objectives.³⁰² The allocation was done “with a carpenter’s eye,” a Dutch expression meaning with some degree of precision, but not with

²⁹⁶ See *id.* at 140-41, 208.

²⁹⁷ *Id.* at 207.

²⁹⁸ See *id.* at 119 (stating that emission reduction objectives for industry are set forth in an August 1992 document entitled *Reduction Objectives for the Industry Target Group*); see also Ministry of VROM, *Towards a Sustainable Netherlands, Environmental Policy In Action No. 1: Working with Industry* (1994) [hereinafter *Towards a Sustainable Netherlands, Environmental Policy In Action No. 1*]; *Towards a Sustainable Netherlands, Environmental Policy In Action No. 6*, *supra* note 270; see generally *Memorandum on Implementation of Target Group*, *supra* note 293, at 30-31 (“The integrated environmental objectives for a particular industrial sector will indicate the extent to which pressure on the environment from that sector as a whole is to be abated.”).

²⁹⁹ See Ministry of VROM, *Note on Target Group Management for Industry* Appendix I and p. 8 (1990) (overview of relative emissions contribution by branches of business) [hereinafter *Note on Target Group Management*].

³⁰⁰ See *id.* at 8; see also *Towards a Sustainable Netherlands, Environmental Policy In Action No. 1*, *supra* note 298, at 2. Emissions data were available from a national emission registration. *Note on Target Group Management*, *supra* note 299, at 8.

³⁰¹ See *Note on Target Group Management*, *supra* note 299, at 6-7.

³⁰² The regional application of emission was also considered. Although the preference was for a “blanket approach,” where “demonstrable additional benefits” could be achieved, the VROM reserved the right to require more stringent objectives. *Memorandum on Implementation of Target Group*, *supra* note 293, at 35-36.

complete exactitude.³⁰³ Although admittedly imperfect at the outset, the level of precision of these objectives was expected to increase over time.

d. Development of Implementing Mechanisms

After the allocation of emission reduction responsibilities, the national, provincial, and local governments then began negotiating with representatives of the sectors, subsectors, and individual companies to reach agreements to meet the apportioned emissions targets. The implementing mechanisms included a combination of compliance with existing BAT and other regulatory requirements, imposition of new government requirements, and voluntary actions by the target groups.

The apportionment of emission reductions on a sectoral and geographic level promoted the development of a number of innovative new environmental compliance mechanisms, most notably covenants. Covenants are voluntary agreements used to assist the target group strategy.³⁰⁴ The key features of the Dutch covenants are as follows: (1) the government reserves its sovereign powers, but expresses a preference for achievement of environmental objectives through voluntary measures; (2) industry commits to meet targets, but reserves its right to raise economic and technical impracticability concerns; and (3) provisions are made for modifications,³⁰⁵ monitoring, and harmonization with international standards.

³⁰³ See Note on Target Group Management, *supra* note 299, at 9.

³⁰⁴ Covenants generally are legally enforceable under Dutch civil law. See Lucas Bergkamp, *Dutch Environmental Law: An Overview of Recent Trends*, *Int'l Env't Daily (BNA)* 148 (Nov. 19, 1993); Van Zijst, *supra* note 14, at 14.

³⁰⁵ In the NEPP2, the Ministry indicated its view of reopening covenants and other agreements:

Agreements already made (covenants, environmental plans, etc.) remain fully in force and binding on all the actors involved, and their progress will be monitored. Where the desired results are not being achieved, corrective action will have to be taken by the target group or within the region, in the first place in the form of phased measures within the term set. Only if this proves unfeasible may consideration be given to achieving the desired reduction elsewhere, on the basis of reciprocity. This will only be considered in the current period if it looks as though the target cannot be reached by a particular target group or region.

NEPP2, *supra* note 271, at 48. At the same time, the NEPP2 indicates that the government will provide greater flexibility to target groups and provincial and local authorities in setting priorities for target groups, subject to three conditions: "choices made should be made visible in plans; choices should be open to public discussion and verification; [and] the realisation of the theme objectives within the term set in the NEPP 1 should remain the key concern." *Id.*

The objective of the covenant approach is a “shift from the imposition of regulations from above to self-regulation within a framework,” allowing the government to limit its role in the longer term to the establishment of the framework and facilitation.³⁰⁶ In some cases, the covenants may obviate the need for regulations.³⁰⁷ By the end of 1995, covenants were expected to have been signed with fifteen sectors, comprising 12,000 companies and ninety percent of priority emissions.³⁰⁸

Covenants vary in form and have evolved over the last several years.³⁰⁹ In general, covenants fall into two types: (1) general (“legislative covenants”) at the national level; and (2) specific (“compliance covenants”) at the provincial and municipal level.³¹⁰ For less complex, more homogeneous industrial sectors (e.g., sectors with a limited number of industrial processes, such as the printing industry) a covenant is negotiated at the branch level.³¹¹ The covenant includes the steps

³⁰⁶ By the publication of the NEPP2 in 1993, 18 covenants had been signed regarding the environmental properties of products, eight regarding process emissions and 26 regarding energy conservation. Covenants with the printing, primary metals, and chemical industries account for 60% of industrial emissions. The Ministry expected to conclude “declarations of intent” with 15 industry sectors by the end of 1995. *See* NEPP2, *supra* note 271, at 18. These 15 sectors include 12,000 companies and account for 90% of Dutch industrial emissions. *See* Towards a Sustainable Netherlands, Environmental Policy In Action No. 1, *supra* note 298, at 10.

³⁰⁷ The NEPP states that “[i]f good results are reached by this method it may be a good enough reason not to impose regulations.” NEPP1, *supra* note 286, at 30-32.

³⁰⁸ *See id.* at 31. Covenants have been developed where legislation is too slow. Interim measures can be obtained by voluntary industry action while a problem is being explored, and legislation can be anticipated by voluntary agreements, with parallel legislation to follow, or where legislation can be “supplemented or tightened” in a covenant.

³⁰⁹ The process begins with preliminary talks aimed at identifying environmental objectives for 1995, 2000, and 2010. These talks are held between representatives of the national, provincial, and municipal governments along with industry sector representatives, including trade associations and labor. *See* Towards a Sustainable Netherlands, Environmental Policy in Action No. 1, *supra* note 298, at 3.

³¹⁰ *See* Bergkamp, *supra* note 304, at 147-48.

³¹¹ *See* Towards a Sustainable Netherlands, Environmental Policy In Action No. 1, *supra* note 298, at 8-10. The process used for the printing industry involved an environmental agreement that provided the structure for an IETP.

necessary to achieve the sector's Integrated Environmental Target Plan ("IETP").³¹² The IETP sets forth negotiated emission reduction targets as well as objectives for achieving other environmental themes (e.g., noise abatement and energy efficiency measures).

For complex, heterogeneous industrial sectors (e.g., the chemical industry) a Declaration of Intent is negotiated with the industry sector to establish the sector's IETP.³¹³ The Declaration of Intent is then signed by individual companies, committing them to establish more specific Company Environmental Plans to achieve the IETP targets.³¹⁴ To

The IETP for the printing sector consisted of a more detailed implementation plan, including specific measures to be taken to meet environmental targets, reporting requirements, timetables, and organizational structures for managing ongoing activities.

³¹² See Ministry of VROM, Declaration of Intent on the Implementation of Environmental Policy for the Chemical Industry (1993) [hereinafter Declaration of Intent, Chemical Industry]; Ministry of VROM, Declaration of Intent on the Implementation of Environmental Policy for the Primary Metals Industry (1992) [hereinafter Declaration of Intent, Primary Metals Industry].

³¹³ See, e.g., Declaration of Intent, Chemical Industry, *supra* note 312; Ministry of VROM, Environmental Policy Agreement with the Printing Industry (1993); Declaration of Intent, Primary Metals Industry, *supra* note 312; Ministry of VROM, Packaging Covenant (1991). The Declaration of Intent also may address processes for further consultation, the role of the parties in overseeing implementation, monitoring and reporting obligations, and other steps. See, e.g., Declaration of Intent, Primary Metals Industry, *supra* note 312.

³¹⁴ The Company Environmental Plans include specific steps to be taken along with deadlines. The Base Metals Industry covenant, for example, did not translate specific target reductions to a per-company level, but allowed the signatory companies to determine the type and timing of steps to be taken. See, e.g., Declaration of Intent, Primary Metals Industry, *supra* note 312; see also Towards a Sustainable Netherlands, Environmental Policy In Action No. 1, *supra* note 298, at 7. The Company Environmental Plans must extend for a period of at least four years and will serve as the basis for the company's permit, but they do not supersede existing permits. See *id.* at 6-7. The Netherlands has instituted a single, multimedia permitting approach. The Environmental Management Act provides for integrated permitting, with the exception of activities regulated by the Surface Waters Protection Act. See Towards a Sustainable Netherlands, Environmental Policy In Action No. 6, *supra* note 270, at 5. Common elements of company environmental plans include identification of emission reductions to be achieved, identification of additional measures to be taken, assessments of possible problems with implementation, inventory of base-year emissions and energy consumption, and use of best available technology as a "starting point." Towards a Sustainable Netherlands, Environmental Policy In Action No. 1, *supra*

provide an enforceable requirement, the emission reduction objectives for a particular company are then included in the company's permits.³¹⁵ Recently, multi-media permitting has been made part of a comprehensive environmental statute, the Environmental Management Act of March 1, 1993.³¹⁶

e. Periodic Review

As a final step in the Comprehensive Policy Planning Process, every four years the Minister of VROM reviews environmental progress and updates the emission reduction targets in a new NEPP. The requirement for the national government and the provinces to produce an environmental policy plan every four years was incorporated into the new Environmental Management Act.³¹⁷ These four-year plans update the emission reduction targets for the eight theme areas and for the economic sectors.

B. Implications of the Dutch System

The differences between the Netherlands and the United States suggest that the process leading to the NEPP and the NEPP itself are unlikely to be replicated in the United States.³¹⁸ The Netherlands is smaller, more densely populated and more industrialized than the United States. The Netherlands also has a strong tradition of government planning and public consensus-building.³¹⁹ In addition, sixty percent of

note 298, at 7. The reporting requirements for signatory companies are standardized, allowing for company-specific evaluations as well as an integrated assessment of the performance of the sector as a whole.

³¹⁵ See Note on Target Group Management, *supra* note 299, at 11.

³¹⁶ See Towards a Sustainable Netherlands, Environmental Policy in Action No. 6, *supra* note 270, at 5.

³¹⁷ See NEPP2, *supra* note 271, at 35.

³¹⁸ One recent source analogized the Netherlands to New Jersey in size and industrialization. However, this source argues that comprehensive planning approaches can work in the United States because such planning has not only succeeded in a nation comparable to New Jersey, but also in New Zealand, which resembles a more agrarian, less densely populated state such as Oregon. See JOHNSON, *supra* note 14.

³¹⁹ See Towards a Sustainable Netherlands, Environmental Policy In Action No. 1, *supra* note 298, at 11 (stating that "Dutch society has a strong tradition of proceeding through consensus building and government/industry relations are no exception").

the Dutch live below sea level, leading to a substantial interest in environmental issues generally and climate change, which could raise sea levels, in particular.³²⁰ Moreover, various aspects of Dutch environmental law differ significantly from the legal framework in the United States.³²¹

Nevertheless, a number of aspects of the Dutch system are both remarkable and potentially relevant to environmental law reform in the United States. The Dutch system takes a methodical, comprehensive, multi-media approach to environmental problems, rather than looking at problems on an ad hoc or media-specific basis. The Dutch system also provides flexibility for covenants and other voluntary means of implementing emission reduction targets.

Although these developments are important, the most fundamental aspect of the new Dutch approach is often overlooked: the country has developed a system based on re-establishing the context for decision-making and action at three levels. First, a national goal was selected for the state of the environment — sustainable development, as identified in the NEPP1 and NEPP2. The debate over national goals appears to have been vigorous and widely followed in the Netherlands. The NEPP and the debate over the NEPP included an explicit, clearly articulated goal of achieving sustainability within one generation. The goal suggested not just an unattainable aspiration for perfection, but also the need for difficult environmental, economic, and social choices. The high costs of achieving sustainability were articulated, as were the implications of not achieving sustainability.

Second, an attempt was made to understand the environmental conditions necessary to achieve that goal (in the form of the *Concern for Tomorrow*³²² report and subsequent updates). Because the NEPP relied heavily on the *Concern for Tomorrow* report, decisions underlying the NEPP were placed in a scientific and policy context for the public and the decisionmakers. These documents also translated the national goal into quantitative objectives for the desired state of the environment and the emission reductions necessary to achieve that state.

Third, an allocation was made of the emission reductions and other actions necessary to achieve environmental characteristics as provided in

³²⁰ See generally ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, ENVIRONMENTAL PERFORMANCE REVIEWS: NETHERLANDS 19-21 (1995); *The Netherlands*, Int'l Env't Rep. (BNA) 207, 210-11 (Sept. 1993).

³²¹ See Bergkamp, *supra* note 304, at 147-48.

³²² CONCERN FOR TOMORROW, *supra* note 274.

the NEPP1, NEPP2, and other documents. As Part V will discuss, the explicit allocation of emission reduction targets among economic and geographic sectors is a critical, although rarely discussed, element of the new Dutch environmental regulatory system.

V. THE FRAMEWORK APPROACH IN THE UNITED STATES

The Dutch experience suggests that many of the weaknesses ascribed to the American environmental regulatory system may arise less from the particular implementing mechanisms of environmental law, whether the command and control system or its market-based alternatives, than from the absence of established environmental ends at three levels: (1) the desired state of the environment (Level I); (2) the environmental conditions that characterize that state of the environment, as well as the corresponding emission reductions and other actions necessary to achieve those conditions (Level II); and (3) an explicit allocation of the emission reductions and other actions among economic and geographic sectors (Level III). I have called the identification of goals at these three levels the Framework Approach.

This Part first outlines the core principles of the Framework Approach (Part V.A) and then distinguishes the Framework Approach from the existing statutory goals and regulatory structure in the United States (Part V.B). The discussion in Part V does not address whether the adoption and implementation of the Framework Approach is feasible — or advisable — in the United States. Instead, the discussion compares the Framework Approach to the existing command and control system to bring the key distinctions between the two clearly into focus. The discussion in Part VI then uses the Framework Approach concepts to expose the underlying weaknesses of the current environmental debate and the environmental regulatory system in the United States, and examines the implications of the Framework Approach for environmental law reform in this country.

A. *Principles of the Framework Approach*

1. *The Meta-Goal: A National Goal for the Environment (Level I Goal)*

The identification of a national goal for the environment is the Level I goal and the first component of the Framework Approach. By a national goal, I mean a succinct summary of the nation's aspiration for the

environment. The Framework Approach does not require the selection of any one particular national goal as the Level I goal.

The sustainable development approach appears to have had some success in the Netherlands and elsewhere for several reasons that may suggest the common characteristics necessary for the Level I goal. First, it is easily articulated and understood. The Dutch articulation of "sustainable development in one generation" arises from a commonly understood and accepted concept: responsibility to the next generation. Second, by not being entirely utopian, it is capable of stimulating a debate over the difficult choices involved in environmental protection. The implications of adopting a sweeping goal that does not acknowledge the trade-offs necessary to achieve it are discussed in Part V.B below. Third, and perhaps most importantly, it provides an easily understood rule of thumb against which to judge more specific actions. The goal is sufficiently cogent to provide guidance in the conduct of the environmental reform debate and the determination of the emission reductions and other objectives of the environmental regulatory system. The existing goals and objectives of NEPA section 101³²³ are very similar to the sustainable development concept and could provide a starting point for deliberations in the United States.

The Level I goal could be expressed in a wide variety of formulations, but its environmental impact would take one of three underlying forms: (1) preservation of the status quo, with no improvement sought or regression permitted (the "Status Quo Option"); (2) regression from the status quo (the "Status Quo-Minus Option"); or (3) improvement from the status quo (the "Status Quo-Plus Option"). The sustainable development goal adopted in the Netherlands and the NEPA goal in the United States are variations of the Status Quo-Plus Option. To better understand the functioning of the Framework Approach, one can assume the selection of any one of these Level I goals.

For example, if the Status Quo Option were adopted, the goal might be formulated as some form of: "Let's keep the environment just the way it is." This formulation would meet the test of easy articulation and comprehension. It also would be sufficiently provocative to stimulate a broad debate over difficult choices. Adopting the Status Quo Option suggests acceptance of the current state of the environment, which is unlikely to occur without significant debate about whether the current state of the environment is acceptable, or too costly, or insufficiently protective for the future. It also suggests a rule of thumb to guide actions.

³²³ See 42 U.S.C. § 4321 (1994).

Furthermore, it is not necessarily a "no action" alternative: if population or human activity levels increase, additional steps would have to be taken to maintain the current state of the environment, whether through new technologies, changes in resource utilization, or additional regulatory controls.³²⁴ If population or other activity levels decrease, presumably a relaxation of environmental restrictions could occur, with the possible exception of the extraction of non-renewable resources. A similar analysis is possible for the Status Quo-Minus and Status Quo-Plus Options. The Level I goal, regardless of the option selected, would provide a starting point for the debate over the desired state of the environment and a guiding principle for the development of the Level II and III goals.

2. *Environmental Conditions and Emission Reductions (Level II Goals)*

The Level II goals include two components: (1) the identification of the ambient environmental conditions necessary to achieve the Level I goal; and (2) the identification of the emission reductions and other actions necessary to achieve the desired environmental conditions.³²⁵ In the Netherlands, the development of Level II goals involved a study that culminated in the *Concern for Tomorrow* report.³²⁶ The Dutch simplified the analysis by organizing it around the eight "theme" areas (climate change, acidification, eutrophication, dispersion of hazardous substances, waste disposal, local nuisance, water depletion, and resource manage-

³²⁴ For example, the United States population increased 27% from 1970 to 1994. See EPA, 1995 AIR QUALITY TRENDS, *supra* note 44, at 4.

³²⁵ Although the term "emission reductions" connotes quantified reductions of chemical pollutants, the concept could be broadened to include a wide range of environmental actions, such as responsibilities regarding pesticides, wetlands, natural resources, or endangered species. In the long run, to encompass the broad range of environmental issues and to facilitate allocation among economic sectors, the effort may require a quantification and allocation, if possible, of these environmental actions. At the outset, however, it could begin with emission reductions.

³²⁶ The RIVM, which is a governmental research body independent of VROM, the Dutch environmental agency, has no direct parallel in the United States. However, the National Academy of Sciences in the United States has comparable independence to the RIVM and a variety of similar government research organizations exist in this country, including the National Institutes of Health and the National Institute of Environmental Health Sciences.

ment) and five geographic “scales of occurrence” (global, continental, fluvial, regional, and local).

Although the Framework Approach need not rely on a particular approach to the Level II goals, the Dutch experience suggests that several elements may be important. First, the Level II goal identification process at the outset may require a credible, scientific study of the trends and anticipated state of the environment.³²⁷ Three components of the study may be essential for the debate and decisionmaking to follow: (1) a snapshot of the expected environmental conditions at a date in the future, based on current trends; (2) identification of the ambient environmental conditions that will characterize the various states of the environment for the different Level II goals under consideration (e.g., the key ambient air and water conditions that characterize a sustainable environment); and (3) identification of the estimated emission reductions and other actions necessary to achieve the Level I goal.³²⁸ The study could be organized based on the “theme” and “scales of occurrence” approach adopted in the Netherlands, or an analogous process could be tailored to the heterogeneous environment of the United States.³²⁹

Second, the determination of environmental conditions could be performed with enough specificity to further define the Level I goal and to provide the basis for determining emission reduction requirements, but

³²⁷ The report prepared for the Netherlands by RIVM included a recommendation on emission levels necessary to achieve the desired state of the environment by the year 2010.

³²⁸ Despite the obvious limitations in data gathering and analysis currently available to support this effort, as discussed *supra* notes 29-35 and accompanying text, the amount of information that is available to assist with the identification of emission reductions is substantial and growing. *See, e.g.*, U.S. ENVIRONMENTAL PROTECTION AGENCY, PROPOSED ENVIRONMENTAL GOALS FOR AMERICA WITH BENCHMARKS FOR THE YEAR 2005 (1995) (draft) (proposing “benchmarks” for climate change, stratospheric ozone restoration, terrestrial ecosystems, food, workplaces, and waste management); HAMMOND ET AL., ENVIRONMENTAL INDICATORS, *supra* note 14, at 11-20. In addition, because of the increased reliance on measuring and tracking emissions and environmental conditions, further study of monitoring mechanisms and environmental indicators may be necessary.

³²⁹ To stimulate public debate, the report may have to limit its evaluation to a relatively small number of key areas. A number of data-gathering efforts have demonstrated that such an effort, although difficult, is probably not beyond the capability of current science. *See, e.g.*, U.S. ENVIRONMENTAL PROTECTION AGENCY, ANNUAL REPORT OF THE TOXIC RELEASE INVENTORY REPORTING PROGRAM (1995).

enough generality to avoid endless debate over small differences in conclusions about environmental conditions and emission reduction requirements.³³⁰ As the Dutch have recognized in applying the “carpenter’s eye” approach to decisionmaking, the issue of precision is critical to the Framework Approach. Given the potential scope of the Level II goals, exactitude would not be possible across all environmental problems and for all geographic levels or areas.

To better understand the Level II goals of the Framework Approach, assume again the selection of the Status Quo Option as the Level I goal. One can select any particular environmental problem to examine the Level II goals that might follow from the Level I goal. Low-level ozone air pollution is one example of a complex problem for which a NAAQS standard and a substantial amount of research already exist.³³¹

To determine the Level II goals, the Status Quo Option could be translated into quantitative national and regional objectives for ambient ozone concentrations that would “keep the environment just the way it is.”³³² The ozone standard could be expressed as it is in the current NAAQS, in a specific concentration for a specific duration (e.g., X parts per million measured over Y period), or an alternative measurement could be used.

³³⁰ For a discussion of the adverse impact on the environmental regulatory system of judicial and executive branch attempts to obtain all information before acting, see Farber, *supra* note 8, at 1293-95 (noting that “[m]istakes are rarely irrevocable in the regulatory arena, and the agency may do better to try a ‘quick and dirty’ interim solution, to be improved when additional information arrives”). See also James E. Krier & Mark Brownstein, *On Integrated Pollution Control*, 22 ENVTL. L. 119, 123-26 (1992).

³³¹ The use of low-level ozone as an example in this Article is not intended in any way to suggest the appropriate outcome of the debate over revisions to the ozone NAAQS. For many compounds, no NAAQS or equivalent standard exists, and establishing the Level II desired environmental conditions will be difficult. But an ambient standard of some type exists for many of the most significant pollutants. The EPA has described ozone as “the most complex, difficult to control, and pervasive of the six principal pollutants.” EPA, 1995 AIR QUALITY TRENDS, *supra* note 44, at 8.

³³² For example, in the most analogous recent exercise in the United States, the establishment of a 10-million ton cap on sulfur dioxide emissions, the principal underlying scientific studies by the National Academy of Sciences (12 million tons recommendation) and National Air Precipitation Assessment Program (8 million tons recommendation) both came under criticism. See Heinzerling, *supra* note 13, at 326.

For low-level ozone, the more difficult task may be identifying emission reduction levels sufficient to achieve the Status Quo Option environmental conditions. The sources of low-level ozone vary widely. The sources include large and small businesses, automobiles, consumer products and other sources.³³³

Calculation of the Level II emission reductions necessary to achieve the desired environmental conditions presumably would require using existing data to establish a baseline of current emissions, projecting growth rates in the relevant economic sectors, and then calculating changes in emissions necessary under projected growth rates to achieve the environmental conditions that characterize the Status Quo Option. The emission reductions from current levels could be expressed in terms of total amounts to be reduced or as percentage reductions. A similar exercise would be necessary for either the Status Quo-Minus Option or the Status Quo-Plus Option.

3. *Emission Reduction Allocations* (*Level III Goals*)

The third component of the Framework Approach, the Level III goal, is the allocation of emission reduction responsibilities. Despite the enormity of the task of establishing the Level II environmental conditions and emission reductions, the more difficult challenge could be allocating emission reduction responsibilities, which many scholars have characterized as largely a political, rather than technical, decision. As Professor Heinzerling has noted, the experience of the acid rain emissions trading debate in the 1990 Clean Air Act Amendments suggests that, as between total emissions levels and allocations of rights to emit among constituents, the latter is far more likely to be subject of congressional interest.³³⁴

³³³ See, e.g., FRANK DIETZ ET AL., ENVIRONMENT, INCENTIVES AND THE COMMON MARKET 62-63 (1995) (identifying 1990 VOC sources in the European Union as originating approximately 50% from large industrial point sources, 35% from small businesses, and 15% from households).

³³⁴ See Heinzerling, *supra* note 13, at 327-28. In the Netherlands, trade groups for many economic sectors played a significant role in negotiating allocations. A wide variety of trade organizations are active in the Netherlands, Germany, and elsewhere in Europe. See Rose-Ackerman, *American Administrative Law*, *supra* note 256, at 1290-91 (noting the prevalence of "private norm-setting organizations" in Germany). It may be more difficult in the United States to identify representatives who can represent many economic sectors, particularly largely unorganized sectors such as consumers.

For the purposes of this Article, I have assumed that the Level III goal would have several components. First, where possible, the emission reduction responsibilities would be established quantitatively to assist the allocation of responsibilities and assessment of performance.³³⁵ Second, all economic sectors that have a significant impact on the environment would be included in any allocation of responsibilities. This would include not only sectors commonly viewed as sources of environmental contamination, such as heavy industry, but also less commonly identified but potentially significant sources of second generation environmental problems, such as consumers. Third, similar allocations also would be made to geographic sectors.³³⁶ Fourth, for the reasons discussed in Part VI, the allocations would be expressed in terms of affirmative steps to achieve the Level I and Level II goals (e.g., emission reduction responsibilities), as opposed to affirmative rights to pollute at particular levels.³³⁷

To continue the hypothetical developed earlier with the Level I and II goals, a hypothetical Level III goal for ozone can be examined. For example, if the Level I Status Quo Option were translated into Level II environmental conditions and emission reduction requirements for ozone, the emission reduction requirements could then be apportioned among economic sectors. This Level III apportionment could include percentage emission reduction targets by a fixed date for the ozone precursors emitted by each substantial source sector. A baseline could be identified for ozone precursor emissions for all sectors in a representative year. The Level III allocations could be established for entire sectors and for subsectors in some instances. The transportation sector could be assigned a *W*% reduction from baseline figures, the industry sector *X*%, the small business sector *Y*%, and the consumer sector *Z*%. Within each major sector, the percentage reductions could be further apportioned among subsectors. For example, within the transportation sector, the percentage

³³⁵ Where the necessary environmental actions are not expressed as emission reductions or are not quantifiable, other performance indicators would need to be developed.

³³⁶ One formulation of this approach would allocate emission reductions by state, geographic region, or ecosystem. In fact, a state-by-state or ecosystem-by-ecosystem component of the allocation may be desirable both for achieving the desired environmental outcomes and for developing an appropriate role for states. See, e.g., Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 11, at 1350-51 (noting the need to identify a geographic basis for emissions allotments and the difficulty of doing so).

³³⁷ See *infra* notes 375-410 and accompanying text.

reductions could be further apportioned among automobiles, airplanes, and so on. Within the industry sector, the percentage reductions could be further apportioned among chemical producers, steel producers, and others.

4. *Process*

A key component of the Framework Approach is the process of debate and decisionmaking that could be used to establish the Level I, II, and III goals. Although the specifics of this process are beyond the scope of this Article, several procedural steps are central to understanding the potential impact of the Framework Approach. The first step is a scientific study and report that identifies the characteristics of the current state of the environment (and baseline emission levels), the characteristics of one or more potential future states of the environment, and, on at least a general level, the types of emission reductions and other changes that may be necessary to achieve each of the various potential future states of the environment.

The second step is a broad public debate over the preferred state of the environment, taking into account the wide range of factors evaluated in the initial study, and culminating in legislation establishing a Level I goal for the nation.³³⁸ The prospect of a statutory edict establishing a Level I national goal may be necessary to trigger such a debate. In contrast, debate over a non-binding report or agency action may not trigger wide public participation, and it may engage only those parties with a particular interest in environmental regulation, replicating the “iron triangle.”³³⁹

The third step is a debate in Congress over, and statutory enactment of, the Level II environmental conditions and emission reduction goals.³⁴⁰ Following the debate and determination of the Level I and II

³³⁸ See Ackerman & Stewart, *Reforming Environmental Law: The Democratic Case*, *supra* note 13, at 191. Only a statute will provide the certainty necessary to allocate emission reductions and the authority to enable development of new implementing mechanisms. Furthermore, so long as areas of uncertainty are identified, the debate over legislation is the appropriate place for discussing the policy choices involved in proceeding in the face of uncertainty. *See id.* (noting that as to fundamental environmental regulatory questions, “it is precisely because they cannot be resolved technocratically that they should be framed in a way that invites self-conscious political decisions by Congress”).

³³⁹ *See supra* notes 207-09 and accompanying text.

³⁴⁰ One approach to establishing the Level II goals could be to charter a

goals, the fourth step is a similar debate and determination of the Level III allocation of emission reduction responsibilities.³⁴¹ The fifth and final step could include legislation that would: (1) provide the EPA with the flexibility to override existing statutory BAT requirements for economic sectors that are on track to meet their emissions targets; or (2) expressly authorize the EPA to develop flexible compliance mechanisms to achieve the next increment of environmental gains, with no override mechanism for existing statutory requirements. The approach followed by the Dutch included retention of existing BAT standards to serve as a floor coupled with new, more flexible mechanisms to achieve future reductions. Alternatively, a phase-out period could be established for sectors or areas demonstrating equivalent or better performance than achieved under the BAT requirements.

The process for adoption of the Framework Approach in the United States, and the feasibility of adoption and implementation, are admittedly substantial hurdles. By not addressing feasibility issues at length in this Article, I do not mean to suggest that the ability to design, implement, and enforce the regulatory system on a day-to-day level is not critically important. In fact, these administrative feasibility concerns were a principal, and probably sound, basis for the decision to use a BAT

national commission on the environment that could have broad membership and a mission to develop quantitative indicators of environmental conditions and overall emission reduction requirements. The commission's product could be a report to Congress and the President. Federal, state, and local agencies could support the commission with staffing and resources. Congress could debate and modify the recommendations of the commission report or could take a pre-commitment strategy much like the Defense Base Closure and Realignment Commission. *See, e.g.,* Robert M. Sussman, *An "Integrating Statute,"* ENVTL F., Mar./Apr. 1996, at 16, 18. For a discussion of precommitment strategies, see Donald A. Dripps, *Precommitment, Prohibition, and the Problem of Dissent*, 22 J. LEGAL STUD. 255 (1993).

³⁴¹ A commission process also could be used for the Level III allocations, with corresponding strengths and weaknesses. Alternatively, the EPA could be required to submit to Congress a proposed allocation report or proposed legislation with allocations. The EPA's priority-setting is unlikely to succeed in part because the courts have rejected priority-setting efforts out of concerns that these "partial solutions" create equitable or distributional problems. *See, e.g.,* *Natural Resources Defense Council, Inc. v. Costle*, 568 F.2d 1369 (D.C. Cir. 1977); *Sierra Club v. Ruckelshaus*, 602 F. Supp. 892 (N.D. Cal. 1984). These court decisions have a strong normative undertone: if pollution is bad, why allow it to occur, even in the name of priority setting? *See* Carol Rose, *Environmental Lessons*, 27 LOY. L.A. L. REV. 1023 (1994).

approach in the first place. As several of the recent reform efforts have recognized, however, major advances have occurred in the last quarter-century that bear on administrative feasibility, including improvements in the understanding of ecosystems and human health, monitoring of environmental conditions, modelling, and data-gathering, as well as advances in the policy tools available to achieve environmental ends. Perhaps most importantly, unlike the era in which the environmental regulatory system developed, the BAT requirements now provide a floor of environmental controls to underpin a new system, at least at its inception.³⁴² Moreover, the recent experience of the Netherlands suggests at a minimum that in the right setting a Framework Approach process is within the realm of possibility. Whether it may be advisable or, at a minimum, whether it will refocus the reform effort on the most important questions, is the subject of Part VI.

B. The Framework Approach Distinguished from Existing Environmental Goals

Before reviewing the pros and cons of the Framework Approach, it is important to consider whether there are meaningful differences between the goals established in the Framework Approach and the plethora of goals that already exist in environmental statutes in the United States. As discussed in Part II, almost all of the major environmental statutes include one or more meta-goals: lofty, absolute aspirations for human health and the environment.³⁴³ The environmental statutes typically combine these meta-goals with difficult implementation choices delegated to the EPA through requirements to either: (1) establish and enforce technology standards,³⁴⁴ or (2) establish specific ambient standards for contami-

³⁴² Of course, even the concept of a "floor" could be subject to debate: should it be the current floor or the current floor plus reasonably anticipated additional regulatory requirements? See William F. Pedersen, Jr., *Can Site Specific Pollution Control Plans Furnish an Alternative to the Current Regulatory System and a Bridge to a New One?*, 25 *Envtl. L. Rep.* (Envtl. L. Inst.) 10,486 (Sept. 1995) [hereinafter Pedersen, *Can Site-Specific Pollution Control Plans Furnish an Alternative*].

³⁴³ The meta-goals in the Clean Water Act have been described as "breathhtakingly ambitious." PERCIVAL ET AL., *supra* note 33, at 879.

³⁴⁴ Examples include the New Source Performance Standards of the Clean Air Act, see 42 U.S.C. § 7411 (1994); the effluent guidelines of the Clean Water Act, see 33 U.S.C. § 1314(b) (1994); and the Best Demonstrated Available Control Technologies standard for hazardous waste treatment of the Resource

nants, with difficult implementation choices further delegated to the EPA or to state permit writers.³⁴⁵ To identify the key differences between the Framework Approach and the existing goals, this Part first examines the distinctions between the Framework Approach Level I goal and the aspirational meta-goals of the current environmental statutes. It then identifies the more difficult, and in many ways more important, distinctions between the Level II and Level III goals of the Framework Approach, and the technology and ambient standard-setting required by existing statutes (see Table 3).

TABLE 3

Framework Approach Compared to Current Scheme	
Framework	Current
Level I — state of the environment	NEPA, CAA, CWA, and other meta-goals
Level II — environmental conditions and emission reductions	NAAQS and water quality standards
Level III — allocated emission reductions for sectors and geographic regions	implicit allocations with limited exceptions (e.g., acid rain emissions trading and the TMDL program)

Conservation and Recovery Act, *see* RCRA § 3004(m), 42 U.S.C. § 6924(m) (1994). A number of environmental statutes defer implementation decisions through delegation to a federal agency to establish other federal requirements that do not include technology standards (examples include the Endangered Species Act, the Clean Water Act § 404 wetlands requirements, and the CERCLA process for selecting site-specific cleanup standards).

³⁴⁵ The two most important examples are the NAAQS/SIP combination of the Clean Air Act, *see* 42 U.S.C. §§ 7409, 7413 (1994), and the water quality standards/National Pollutant Discharge Elimination System permit combination of the Clean Water Act, *see* 33 U.S.C. § 1314(c) (1994).

1. *The Meta-Goal*

As discussed in Part II, NEPA and most of the other federal environmental statutes include at least one meta-goal. The NEPA meta-goal is lengthy, but it is remarkably similar to the goal of “sustainable development in one generation” adopted by the Netherlands and several other countries.³⁴⁶ In short, NEPA provides that the environmental goal of the United States is “to use all practicable means and measures . . . in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.”³⁴⁷ As with the goal of sustainable development, the NEPA goal is tied to a sense of intergenerational responsibility. The NEPA goal is not absolute: it does not ignore economic or social concerns. Instead, it attempts to strike a balance between the environment (“conditions under which man and nature can exist in productive harmony”³⁴⁸) and social and economic values (“fulfill the social, economic and other requirements of present and future generations of Americans”³⁴⁹).

Although the NEPA goal is remarkably similar to the goal of sustainable development in one generation adopted in the Netherlands, it is different in three important respects. First, in contrast to “sustainable development in one generation,” the NEPA meta-goal is not formulated in a sufficiently simple, succinct fashion to serve as a useful rule of thumb for the public debate. Second, as discussed in Part II, the NEPA goal is only loosely tied to ongoing evaluations of environmental quality and to evaluations of executive branch, congressional, and state actions to achieve the goal. Third, the NEPA goal has not been translated into comprehensive ambient environmental conditions or legally enforceable rights or requirements for governmental action. As a result, it is largely unknown and irrelevant to the participants in the environmental reform debate, and to many environmental lawyers, judges, elected representatives, and executive branch decisionmakers.

Each of the major environmental statutes also includes one or more meta-goals. These goals differ from the Framework Approach Level I goal in two respects. First, unlike the NEPA goal, the meta-goals in the

³⁴⁶ See *supra* notes 282-91 and accompanying text.

³⁴⁷ NEPA § 101(a), 42 U.S.C. § 4331(a) (1994).

³⁴⁸ *Id.*

³⁴⁹ *Id.*

existing statutes typically are absolute. For example, the Clean Air Act goals suggest that absolute protection of “human health” and “welfare” will be achieved through the Act.³⁵⁰ Similarly, the 1972 Clean Water Act established goals of “fishable and swimmable” waters nationally by 1983, with a total elimination of discharges by 1985.³⁵¹ Although these meta-goals establish admirable aspirations, their promise of absolute protection has rendered them largely irrelevant.³⁵² As the failure to achieve the Clean Water Act’s goals suggests, the absolute protection promised in these goals is unlikely to occur without a total elimination of emissions. With some exceptions, a total elimination of emissions is either physically impossible or unlikely to occur without extreme cost and social dislocation. Therefore, these statutory meta-goals quickly became irrelevant not only to the environmental reform debate, but also to the implementation of the laws themselves. Because the goals promise an unlikely and unenforceable outcome, their aspirational value is lost, they generate public distrust of government, and they provide little guidance to agency and judicial decisionmaking.³⁵³

Second, each of these statutory meta-goals is “hanging in air”: it is unclear what achievement of the goals will bring. Perhaps the best illustration of this phenomenon is the “no net loss” policy developed to administer the Clean Water Act section 404 wetlands program (although this is actually an administrative policy, not a statutory goal).³⁵⁴ The “no net loss” goal meets several of the criteria discussed above, and its

³⁵⁰ The Clean Air Act § 109 requirement is to set primary ambient air quality standards that, “allowing an adequate margin of safety, are requisite to protect the public health” and secondary standards that are “requisite to protect the public welfare from any known or anticipated adverse effect.” 42 U.S.C. § 7409 (1994).

³⁵¹ See 33 U.S.C. § 1344 (1994).

³⁵² For a review of the limits of aspirational goals in environmental law, see James A. Henderson, Jr. & Richard N. Pearson, *Implementing Federal Environmental Policies: The Limits of Aspirational Commands*, 78 COLUM. L. REV. 1429 (1978).

³⁵³ See, e.g., Ruckelshaus, *supra* note 230, at 25-27; see also Adam Babich, *Regulatory Reform and the Chevron Doctrine*, 26 *Envtl. L. Rep. (Envtl. L. Inst.)* 10,597, 10,599 (Nov. 1996) (advocating establishment of “reasonable” statutory goals for use in judicial review of agency decisionmaking).

³⁵⁴ See Clean Water Act § 404, 33 U.S.C. § 1344 (1994); *Memorandum of Understanding Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under Clean Water Act Section 404(b)(1) Guidelines* (Feb. 6, 1990).

approach is far preferable to the approach taken in many of the statutory meta-goals. For example, the no net loss goal is not absolute, and it provides an easily comprehensible standard for decisionmaking. The goal does not provide for protection of all wetlands, just of the net acreage of wetlands. This type of goal is easier to apply than an absolute aspirational goal, and it is significantly more valuable for facilitating meaningful oversight, as well as stimulating public debate and public involvement, than the meta-goals of the Clean Air Act and the Clean Water Act.

Nevertheless, the no net loss goal differs from the Framework Approach goals because it is hanging in air. It lacks a fundamental foundation: Why no net loss? Do we have the desired net acreage of wetlands today? Too few? Too many?³⁵⁵ For what purpose?³⁵⁶

In the absence of a conceptual context or rationale for the goal, the “no net loss” objective is difficult to defend against criticisms either from wetlands advocates or from property rights advocates. As a result, the decision regarding any particular wetland is much more controversial and difficult to defend. That situation, in turn, spawns delay, interest group pressure, litigation, and inconsistent outcomes in agency decisionmaking. Perhaps most importantly, there is no certainty that the wetlands necessary to meet long-term needs are being preserved or, for that matter, that we are not expending substantial resources preserving wetlands that are not necessary to meet long-term needs.³⁵⁷

³⁵⁵ Of course, the answer may simply be that there is no scientific agreement, or no answer to be found in science generally, to these questions. Even in that event, however, a national debate over these fundamental questions — whether the answers are science-based or pure policy choices — is important to a broad democratic discourse and resolution of desired outcomes regarding wetlands. The fact that this decision was made in a memorandum of understanding between two federal agencies only emphasizes the extent to which national policy is unlikely to be the product of broad, deliberative debate and resolution of desired environmental outcomes.

³⁵⁶ In asking this question, I do not presuppose that there must be a utilitarian purpose, only that a decision should be made as to the purpose. For example, one could decide that wetlands should be protected only insofar as they have a functional utility, such as support for the human food chain, protection of endangered species, or other needs. Alternatively, one could decide that wetlands have intrinsic aesthetic value that requires protection of all that remain, or even restoration of previously destroyed wetlands, regardless of their functional utility. Neither objective is irrational, but the absence of an articulated objective arguably is.

³⁵⁷ Again, by long-term needs, I do not presume to answer whether those needs are based on an aesthetic, utilitarian, or other approach.

In contrast, the Framework Approach Level I goal would differ by acknowledging trade-offs (such as sustainable development in one generation or even the Status Quo Option) and by connecting the goal to a comprehensive set of desired environmental conditions, as well as the emission reductions necessary to achieve those conditions. This comprehensive, environmental outcomes-based strategy could approach the "hanging in air" problem by providing some comfort that achieving the desired emission reductions will, within the limits of certainty, result in achieving the desired state of the environment. The Framework Approach goals thus may differ from the current meta-goals by providing the public with a basis for assessing whether particular actions are necessary to achieve agreed-upon environmental conditions.

2. *The Meta-Goal with Delegated Technology Standards*

As discussed in Part II, the mainstay of the command and control system is the combination of lofty aspirations and delegated BAT requirements included in the NSPS provisions of the Clean Air Act, the effluent guidelines of the Clean Water Act, and similar statutory provisions.³⁵⁸ These provisions require the EPA to promulgate and, in conjunction with the states, to enforce regulations requiring that certain types of point sources install and maintain BAT for pollution control. These provisions are distinct from the Framework Approach in two principal ways.

First, the BAT provisions differ from the Level III goals of the Framework Approach in the way they distribute regulatory burdens. In short, the BAT provisions do not include an explicit, statutory allocation of emission reduction responsibilities. Of course, the BAT provisions do have significant distributional effects: they allocate emission reduction responsibilities, but they simply do not do so explicitly.³⁵⁹ Instead, the BAT provisions require the EPA to make an implicit determination of emission reduction responsibilities through notice-and-comment rule-making on BAT standards for specific industrial sources or, with the states, on facility-specific permits. These implicit allocations occur with

³⁵⁸ A third example is the Resource Conservation and Recovery Act Best Demonstrated Available Control Technology standards. See RCRA § 3004(m), 42 U.S.C. § 6924(m) (1994). For a discussion of the role of these BAT requirements, see, for example, Sunstein, *Democratizing America*, *supra* note 26, at 949.

³⁵⁹ See, e.g., Stewart, *Madison's Nightmare*, *supra* note 19, at 335.

limited statutory guidance, but under tight statutory deadlines, and with frequent litigation, judicial review, and congressional oversight.³⁶⁰ Although the product of the statutory BAT standards is an allocation of emission reduction costs and other responsibilities, the implicit allocation approach is extremely slow and litigious. It also is rarely transparent or amenable to public participation, and it produces allocations that provide little certainty.³⁶¹

Second, the BAT provisions are only loosely linked to achievement of ambient environmental conditions (the Level II goal). For example, in both the Clean Air Act and the Clean Water Act, the relationship between technology standards and ambient conditions theoretically could occur at two levels: (1) in the drafting and promulgation of specific technology requirements for particular types of sources, such as the Clean Air Act NSPS and Clean Water Act effluent guidelines; and (2) in the imposition of Clean Air Act SIP and facility-specific air permit requirements and Clean Water Act facility-specific NPDES permit requirements. As discussed in Part II, however, to avoid the early problems with ambient approaches, the Clean Air Act and Clean Water Act BAT standards typically are not based on estimates of their impact on ambient environmental conditions, and in some statutes Congress expressly prohibited consideration of ambient environmental conditions.³⁶² Furthermore, as discussed in Part V.B.1, in practice a meaningful linkage between technology standards and ambient standards occurs only at the facility-specific permit level, and even at that level it is often a secondary concern.³⁶³

In contrast, the Level II goals for emission reductions and other actions envisioned in the Framework Approach would be based directly

³⁶⁰ See *supra* Part II.A.1.c (notes 122-46 and accompanying text). According to a recent article, in 1992 more than 100 congressional committees and subcommittees claimed jurisdiction over the EPA (second only to the Department of Defense, which has a budget approximately 50 times larger than the EPA's budget). See Kaufman, *supra* note 168, at 35; see also Ruckelshaus, *supra* note 230, at 956-57.

³⁶¹ See Sunstein, *Democratizing America*, *supra* note 26, at 949.

³⁶² See *supra* Part II.B.1 (notes 122-46 and accompanying text).

³⁶³ See Oliver A. Houck, *Clean Water Act and Related Programs*, CA37 ALI-ABA 295 (1996) [hereinafter, Houck, *Clean Water Act*]. For example, major new effluent guidelines discuss the ability of proposed BAT standards to achieve ambient water quality standards very little, if at all. See, e.g., 40 C.F.R. § 455.20-.22 (1996) (Pesticide Chemicals Category Effluent Guidelines).

on ambient conditions. In the hypothetical example, the aggregate technology-based emissions levels, and the ambient conditions created by them, would form the initial basis for any Status Quo Option approach. Of course, a Status Quo-Plus approach would require improvements over those baselines, and a Status Quo-Minus approach would permit digression from them.

3. *The Meta-Goal with Delegated Ambient Standards*

The NAAQS of the Clean Air Act and the water quality standards of the Clean Water Act are the principal provisions in the command and control system that link ambient standards to emission requirements, and they are the closest approximation in the current system to the Level II goals envisioned in the Framework Approach. The NAAQS, in particular, are unusual among environmental provisions in that they seek to link the overall national aspiration for clean air to specific environmental conditions. In short, the Clean Air Act requires that the states incorporate requirements in State Implementation Plans ("SIPs") that are sufficient to achieve the NAAQS for the six criteria pollutants.³⁶⁴ The SIP terms guide state decisionmaking on facility-specific controls for air emission sources.

The states typically use modelling to determine whether the combination of uniform, statutory BAT standards and additional site-specific permit terms imposed on air emissions sources in the air quality region will result in achievement of the NAAQS. The SIPs are subject to EPA review and approval.³⁶⁵ In the absence of SIP provisions that are sufficiently stringent to attain NAAQS "as expeditiously as practicable," sanctions are available, ultimately including the requirement that the EPA Administrator promulgate a federal implementation plan.³⁶⁶ In practice, however, these types of coercive mechanisms are extremely difficult to impose.³⁶⁷

³⁶⁴ See Clean Air Act § 110, 42 U.S.C. § 7410 (1994). SIPs include emissions limitations, as well as timetables for their imposition. See *supra* note 138 and accompanying text.

³⁶⁵ See generally Schoenbrod, *supra* note 17, at 763-65. In addition, Title V of the Clean Air Act Amendments of 1990 now provides a federal air permit requirement for major sources. See Clean Air Act Amendments of 1990 § 112, 42 U.S.C. § 7412 (1994).

³⁶⁶ See Clean Air Act §§ 110(a)(2)(I), 172, 173; 42 U.S.C. §§ 7410(a)(2)(1), 7572, 7573 (1994).

³⁶⁷ See, e.g., Schoenbrod, *supra* note 17, at 740; see also Farber, *supra* note

Similarly, to achieve ambient water quality standards, the Clean Water Act requires point sources to comply not only with BAT requirements, but also with any more stringent requirements imposed by state or federal law through NPDES permits.³⁶⁸ For example, the EPA and the states may impose a zero discharge requirement on toxics emissions if necessary to achieve ambient water quality standards.³⁶⁹ Modelling is used to demonstrate that the combination of uniform, statutory BAT standards, such as effluent guidelines, and additional specific permit terms imposed on the sources in the watershed, will result in achievement of the water quality standards.³⁷⁰

In practice, however, many NPDES permits only require sources to use BAT controls and do not impose more stringent conditions in order to achieve ambient water quality standards.³⁷¹ If states fail to impose permit conditions sufficient to achieve ambient water quality standards,

8, at 1292 (noting the difficulty of withdrawing EPA-delegated authority).

³⁶⁸ See, e.g., Federal Water Pollution Control Act § 302, 33 U.S.C. § 1312 (1994). If effluent restrictions to achieve water quality standards are more stringent than BAT standards, the more stringent water quality-based standards must be met. See *Homestake Mining Co. v. U.S. EPA*, 477 F. Supp. 1279, 1285-86 (D.S.D. 1979).

³⁶⁹ See, e.g., Federal Water Pollution Control Act § 302(a), 33 U.S.C. § 1312(a) (1994).

³⁷⁰ For a discussion of the difficulty of estimating or modelling water quality impacts from emissions sources, see Houck, *Clean Water Act*, *supra* note 363, at 10,544-45 (concluding that “the permitted levels of toxic pollution from identical plants to identical waters are going to vary widely across the country not only from the more visible differences in state water quality criteria, but also from the nearly invisible calculations by which they are derived”).

³⁷¹ See PERCIVAL ET AL., *supra* note 33, at 924, 879-83 (maintaining that water quality permit requirements were “retained primarily as a backup when effluent limitations proved insufficient to protect water quality”); see also Houck, *Clean Water Act*, *supra* note 363. The exceptions to the overall reliance of the Clean Water Act requirements on effluent limitations are the § 304(1) process required by the 1987 Clean Water Act amendments and § 303(d) TMDL process. See 33 U.S.C. § 1313(d) (1994). Section 304(1) requires states to identify water bodies that are not meeting designated uses because of degradation by toxics and to impose “individual control strategies” on sources for those water bodies. The TMDL process focuses on establishing total loads for entire watersheds. For a discussion of the status of the Clean Water Act § 303(d) TMDL program, see *supra* note 142. See also *Water Pollution: Administrative Efforts to Improve TMDL Program Under Way*, *EPA Official Says*, *Daily Env't Rep.* (BNA) A-5, A-6 (July 16, 1996).

the EPA has few options: withdrawal of the state's delegated authority, or time-consuming, costly, and intrusive permit-by-permit oversight.³⁷²

Although the NAAQS and water quality standards are similar to the Level II goals of the Framework Approach, they differ from the Framework Approach in several important respects. The Framework Approach would place the Level II air, water, and other ambient standards in the context of the larger national goal (Level I), and would include in the Level II goals a much broader set of environmental conditions than the NAAQS air standards and the water quality standards. The Level II goals of the Framework Approach would include not only the environmental conditions that parallel the current ambient standards, but also the overall emission reductions necessary to produce those environmental conditions. The Framework Approach goals therefore differ from the NAAQS and water quality standards by providing a more obvious linkage between the national goal, specific environmental outcomes, and the requirements for changed behavior.

The principal difference between the Framework Approach and the existing ambient standards, however, is that Congress stopped short of explicitly apportioning responsibility for achieving the NAAQS and water quality standards, whereas the Framework Approach Level III goal would explicitly allocate emission reduction responsibilities among economic and geographic sectors. With the exception of the acid rain allowance trading scheme of the 1990 Clean Air Act Amendments, this has not been attempted on a statutory level in the United States. Instead, the apportionment of emission reduction requirements has taken place implicitly, through agency rulemaking and facility-specific permits, causing the delays, litigation, and other distribution-driven problems discussed in Part II.³⁷³ Explicit apportionment by federal and state agencies of responsi-

³⁷² See Farber, *supra* note 8, at 1292. Clean Water Act § 301(b) authorizes the EPA to impose additional limits on discharges if it determines that the BAT standards in a permit will not achieve the water quality standards set for the area. See 33 U.S.C. § 1313(a)-(b) (1994).

³⁷³ To some extent, EPA action currently is discouraged by the Hobson's choice presented by the remaining exceedences of ambient standards: impose near-zero emissions requirements on existing first generation point sources at great cost, or impose — and, at least implicitly, allocate — sweeping, intrusive, and unpopular requirements on the multiple, non-point, second generation sources that have never been effectively regulated. The distributional choices in the final analysis are likely only to be resolved by Congress in any event, and in fact may be most suitable to expressly political decisionmaking, so long as the selected ambient conditions are met.

bilities for releases of effluents to watersheds has been attempted under the Clean Water Act Total Maximum Daily Load ("TMDL") provisions. Under the TMDL program, the agencies, not Congress, are responsible for emissions allocations, and progress has been slow.³⁷⁴ By providing for Congress to make express allocations of emission reduction burdens, the Level III goals of the Framework Approach thus differ from the TMDL program.

VI. IMPLICATIONS OF THE FRAMEWORK APPROACH

In prior Parts, this Article has examined the legacy of false lessons from the early history of environmental law in the United States, examined the core elements of the Framework Approach, and distinguished the Framework Approach from the current environmental regulatory system. Given the significant differences between the Framework Approach and the current command and control regulatory system, the obvious question is whether the Framework Approach offers potential benefits worthy of taking the risk of implementing a largely untried concept.

This Part reviews the implications of the Framework Approach for the current regulatory system. It examines the potential impact of the Framework Approach on the environmental law reform debate, and on the democratic, environmental, and economic consequences of environmental regulation. At this point, the Framework Approach is not well enough defined, and the Dutch system that serves as its model is too early in its development, to provide concrete answers to the implementation questions. It is clear, however, that many of the shortcomings of the environmental law reform debate, and many of the criticisms about environmental regulation, arise from the absence of the clear objectives that are envisioned as the Level I, II, and III goals of the Framework Approach.

A. *The Impact of the Framework Approach on the Environmental Law Reform Debate and the Democratic Process*

The Framework Approach has implications for the functioning of the broader democratic system in four principal areas: (1) the public debate regarding environmental protection; (2) the impact of factions; (3) the

³⁷⁴ See, e.g., *supra* note 142 (noting that at the current pace it will take Oregon 400 years to fully implement the TMDL program).

accountability of the three branches of government; and (4) the role of the states.

1. *The Environmental Law Reform Debate*

a. *The Level of Public Discourse*

The Framework Approach demonstrates the extent to which the environmental law reform debate in the United States is conducted in a near vacuum of substantive context. The fact that Level I, II, and III-type goals are not a significant part of the current debate points out the extent to which several of the most fundamental questions are rarely deliberated: (1) what is the desired current state of the environment?; (2) what are the characteristics of the desired state of the environment and the burdens of achieving that state?; and (3) who should bear these burdens?

The absence of goals at all three levels contributes to many of the democracy shortcomings in the debate identified by Professor Stewart and others.³⁷⁵ In the absence of an attempt to make explicit, public decisions at all three levels, the general public, Congress, and executive branch officials only have limited opportunities to debate decisions regarding the most important environmental questions. Instead, given the narrow issues raised by any particular new regulation or permit in the current regulatory system, the debate often either focuses on vague generalities and unrealistic policy declarations, or gets lost in the details.

In the debates over the technical issues that characterize the BAT-driven regulatory process, the general public and elected representatives have little incentive to deliberate over the desired outcomes and trade-offs of environmental law.³⁷⁶ In the debates over the existing ambient

³⁷⁵ See Stewart, *Madison's Nightmare*, *supra* note 19, at 335. For a description of the "democracy deficit," see *supra* Part II.B.3 (notes 193-214 and accompanying text).

³⁷⁶ See *supra* Part II.A.1.c (notes 122-46 and accompanying text). To the extent there are incentives to express altruism and high public aspirations in the public context, the debate over the Framework Approach goals may provide an opportunity to translate those aspirations into legally binding requirements. Although a case-by-case cost-benefit analysis, even if carefully done, may create democracy problems if the analysis only reflects "market" preferences, not "public" preferences, a public debate on ends ensures some opportunity for the latter to be discussed in an appropriate setting. See Sunstein, *Endogenous Preferences*, *supra* note 90, at 217 (asserting that legislators want to be able to express high aspirations, knowing they will not be enforced).

standards, the absence of an operative national goal leaves the dialogue without a substantive foundation — the “hanging in air” problem discussed above. As a result, the debate over environmental statutes provides little opportunity for meaningful participation by citizens and elected representatives.

If conducted in connection with a sound scientific study of environmental conditions, the Framework Approach debate may be more substantive than the current debate. At the outset, the debate over establishment of the initial Level I, II, and III goals could stimulate open discussion about both the importance of environmental protection and the trade-offs involved in environmental measures. Over the long-term, the context provided by the Level II environmental conditions also could increase the likelihood that future debates regarding the implementing mechanisms necessary to achieve the goals will be comprehensible to the general public, and will provide the public with some means of judging the heated rhetoric about environmental disasters and economic costs. In the process, the debate may yield many of the benefits enunciated by the democracy theorists.³⁷⁷ As Professor Sunstein has stated, “[k]nowing choices are a precondition for liberty.”³⁷⁸

Nevertheless, it is important to recognize that substantial risks could arise from the Framework Approach. In the absence of an extremely carefully managed process, the dysfunctional aspects of the current debate could overwhelm attempts to set Level I, II, and III goals. Similarly, if a credible, accessible scientific study did not precede the debate over Level I and II goals, the public discourse would be no more governed by substantive concerns than the current debate. Preparing a study that is credible to experts and understandable to non-experts will be extremely difficult given the complexity of the issues, the scope of the study, and the lack of consensus about the calculation and role of risk, aesthetic values, and other issues. The concept of risk analysis for setting goals is sufficiently controversial to block the entire process if the overall benefits of the Framework Approach do not overwhelm concerns about its appropriate role, methodology, and required level of precision. Determining the appropriate role for aesthetic values could be equally difficult.

³⁷⁷ To succeed in the United States, the debate would need to engage Congress, the President, state and local government, the regulated community, public interest groups, and the general public, including not only participants with a particular interest in the environment but non-specialists as well.

³⁷⁸ Sunstein, *Democratizing America*, *supra* note 26, at 960.

In addition, even if a credible scientific study were prepared, it would only be a starting point. The determination of Level II and III goals would require many tough judgment calls. The challenge of managing the process in a way that could produce meaningful public participation and reasoned deliberation in Congress, as well as an end product with enough generality to capture the public's interest and enough specificity to guide future decisions, would be a formidable undertaking.

In the final analysis, the assessment of whether a construct such as the Framework Approach is preferable as a substitute for, or as an addition to, the current command and control system will depend in large part on the quality of the debate triggered by the initial study. The inevitable generalizations and inaccuracies of the study and debate regarding environmental protection could overwhelm the benefits of establishing goals on all three levels. As many critics have noted, environmental decisionmaking based on ambient standards or on precise estimates of risk in many cases have produced inaction. In addition, many risk issues may be as inaccessible to public understanding as technology standards.

On balance, however, it may be easier to express large policy choices on the basis of risk and public value judgments (e.g., should priority be placed on toxic sites or on certain types of air pollution?) than to express more specific choices based on these criteria (e.g., what concentration should be achieved of a particular constituent at a Superfund site or in the air?). Although there is always a potential that interest groups will use the fog of the debate to produce outcomes unintended by the public or decisionmakers (e.g., by using environmental or economic scare tactics), the existence of the current system provides some comfort that a fallback is available. In addition, the benefits of public education regarding second generation problems that may accrue from the Framework Approach debate suggest that its impact on the level of public discourse is worth a hard look.

b. Distribution of Burdens

The Framework Approach also demonstrates the extent to which an absence of context in the environmental reform debate enhances the distributional problems discussed in Parts III.C.1 and V.B.3. Each branch of the federal government, as well as state and local governments, industry, public interest groups, and the general public, can seek self-interest, espouse adherence to high standards, and blame others for

problems.³⁷⁹ In the absence of goals at all three levels, each participant has incentives to use the debate to shift compliance burdens to other parties, and no participant is encouraged or compelled to identify the trade-offs in its position. When trade-offs are not acknowledged, polarization increases.

The Framework Approach, in contrast, could reduce polarization by creating a context in which trade-offs are more difficult to ignore. In addition, it may address the distribution of burdens problem through the establishment of Level III goals. As a result, it may generate a more thorough public debate about the most difficult problems facing the environmental regulatory system.

The Level III allocations also could address the frequent criticism that prior ambient standards in many cases have not produced desired environmental outcomes³⁸⁰ and that the EPA has been reluctant to impose sanctions on states that do not achieve the standards.³⁸¹ Although these criticisms have fueled the idea that ambient standards are impossible to administer or enforce and have led many to believe that a choice must be made between ambient and technology standards, a closer look at the failures of these ambient standards, and a comparison of the ambient standards with the Level II and III goals, suggests that the criticisms may be misdirected. In fact, the inability of the EPA and the states to coerce compliance with ambient standards in some cases may be fueled by the difficulty of making decisions that are largely policy or political choices about the distribution of environmental protection costs among economic and geographic sectors based on regulatory and permitting requirements that are largely technical.

Despite these potential benefits, there are significant risks in allocating Level III environmental burdens: (1) the allocations could

³⁷⁹ This dysfunctional aspect of the current debate also could be viewed as the product of a "commons" problem on a political level. The classic commons problem, called an "*n*-person prisoner's dilemma" by game theorists, occurs when multiple actors extract value from a common resource. In the classic case, such as a fishery or common grazing area, each party has an incentive to over-extract common resources to the point where the total amount exacted by all parties declines, such as through overgrazing or depletion of fisheries. *See, e.g.*, Garrett Hardin, *The Tragedy of the Commons*, 168 SCI. 1243 (1968); *see also* PERCIVAL ET AL., *supra* note 33, at 47-48.

³⁸⁰ *See, e.g.*, Schoenbrod, *supra* note 17, at 740.

³⁸¹ *See, e.g.*, Heinzerling, *supra* note 13, at 300 (Clean Air Act); Oliver A. Houck, *Ending the War: A Strategy to Save America's Coastal Zone*, 47 MD. L. REV. 358, 389-90 (1988) (Clean Water Act).

provide an opportunity for back-door alterations to the overall Level I goal and Level II emission reductions; (2) the deliberations could be too narrowly technical and therefore resistant to public participation; and (3) the technical or political difficulty of the task could overwhelm the decisionmaking capacity of Congress and the executive branch. If the Level I and Level II decisions remain intact, however, the Level III debate may not produce a sub-rosa attack on the agreed-upon meta-goal for the state of the environment, or on the desired environmental conditions and aggregate emission reductions.

The problem of narrow technical issues precluding public involvement and encouraging capture is a more difficult problem. Nevertheless, on balance, a debate concerning relative risk, aesthetic values, and other factors arguably may be more comprehensible and less subject to capture than the debate about which technologies are necessary under BAT standards. Even if Level III allocation issues are no more comprehensible than technology issues, an additional factor weighs in favor of the Level III allocation process. If the Level III debate is conducted after the completion of the initial Level I and Level II decisions, the overall level of emission reduction responsibilities will have been established, and a zero-sum situation will have been created. Participants in the debate will have clear incentives to police the debate over the allocation of emission reductions because any reduction in one sector's allocation may produce an increase for other sectors. Thus, even if the issues are not intrinsically more comprehensible, the debate may be less opaque than under the current system, thereby yielding greater public understanding and increased participation.

Perhaps the most substantial risk arising from the Level II allocations is that technical or political difficulties will overwhelm the decision-making capacity of Congress and the executive branch. Despite the evolution of scientific understanding and the enormous quantities of data collected over the past twenty-five years, a sound allocation of emission reduction burdens may be difficult, although it may no longer be impossible.³⁸² The political hurdles would be no less formidable. Professor Heinzerling's review of the congressional debate over the acid emission allocations in the 1990 Clean Air Act Amendments demonstrates

³⁸² See, e.g., *Water Pollution: Guidance Planned on Water Act Programs as EPA Seeks Rapid Implementation, Flexibility*, 17 *Env't Rep. (BNA)* 4 (Sept. 1987) (quoting Rebecca Hamner for the proposition that by 1987 the monitoring, emissions database, permitting, and enforcement were better able to support water quality standards than in 1972).

that Congress is likely to show great interest in the allocation process. The greater problem may be to design a process that establishes emission reduction requirements at a sufficiently detailed level to provide direction to economic and geographic sectors without leading to decisions that are so technical that the "iron triangle" is replicated. Despite these hurdles, at a minimum the Framework Approach decisionmaking may be able to produce an explicit debate over who should bear the burdens of achieving the desired state of the environment.

c. The Environmental Agenda

Perhaps the greatest adverse impact of the current dysfunctional debate is its impact on the strategic environmental agenda. The debate participants have little basis on which to make long-term priority-setting decisions and little opportunity to do so. The pivotal decisions that remain unaddressed range from which environmental problems deserve the greatest responses to which types of information should be collected.

Most important, the absence of goals at all three levels also leaves the press and the general public without the context necessary to understand and evaluate environmental crises or challenge the claims of each participant in the debate. This absence of information contributes to the wide pendulum swings of the environmental agenda.³⁸³ The absence of context also hinders prompt responses to important new information, and limits the ability of policymakers to fend off calls for action regarding problems that are urgent but not important. Although many second generation problems are critically important, they often are not urgent and thus get lower priority in the current debate.

In addition to the negative impact on the strategic agenda, the absence of clear goals encourages litigation and can make management of the day-to-day environmental agenda extremely difficult. Litigation

³⁸³ See Ruckelshaus, *supra* note 230, at 25-28; Pedersen, "Protecting the Environment," *supra* note 26, at 975. Pedersen has noted that:

As the often ineffectual efforts of the past twenty-five years have shown, in the short run public opinion alone is both easily titillated and easily appeased. Without a deep understanding of the political and institutional changes required to accomplish results, the public will not know what to demand and its representatives will not know what to supply.

Id.; see also Sunstein, *Democratizing America*, *supra* note 26, at 959 (noting that "[p]ublic attention tends to be focused on particular incidents, which are gripping and sensationalistic, but often misleading").

currently plays a powerful but uncoordinated role in setting the agenda of federal agencies.³⁸⁴ The courts have only specific matters before them and have limited statutory guidance from which to evaluate the impact of a particular decision on the overall agenda, yet a substantial proportion of the EPA's agenda is set by court orders.³⁸⁵ The scatter-shot nature of court decisions is not only an inefficient means of setting environmental priorities, it is also unlikely to produce a rational allocation of resources.

The debate over the Framework Approach, regardless of its outcome, may have three significant benefits for the environmental agenda. First, it may lead to a better developed and more realistic public understanding of the environment, and to less litigation, and therefore a more stable, strategically focused agenda. Second, to the extent aspirations for the public good can be created or nurtured, the debate may provide the setting to make this possible.³⁸⁶ In contrast to market systems based on the creation of rights or entitlement to pollute, an allocation of pollution reduction responsibilities could have a positive normative message for the environment.³⁸⁷

³⁸⁴ See generally Robert Glicksman & Christopher H. Schroeder, *EPA and the Courts: Twenty Years of Law and Politics*, 54 *LAW & CONTEMP. PROBS.* 249 (1991) (examining the extent of judicial review of EPA decisionmaking). Courts often require extensive documentation of agency decisions. The context provided by Level I, II, and III goals could reduce the judiciary's focus on extensive documentation of agency decisionmaking and increase its focus on whether the agency action in question is an appropriate attempt to achieve the goals. See, e.g., *Corrosion Proof Fittings v. U.S. EPA*, 947 F.2d 1201 (5th Cir. 1991); Babich, *supra* note 353, at 10,598-99.

³⁸⁵ The courts reach decisions in individual cases that have significant impacts on priority-setting without the obligation or opportunity to select among difficult agency choices and without a substantive framework in which to evaluate agency allocation of resources and exercise of discretion in rulemaking, cleanup standards, or similar matters. The result is a mixture of stringent court decisions and deadlines in some areas, see *Les v. Reilly*, 968 F.2d 985 (9th Cir. 1992), and little or no judicial intervention in others (such as Federal Insecticide, Fungicide, and Rodenticide Act ("FIFRA") pesticide registrations generally).

³⁸⁶ In addition, Professor Sunstein has maintained that in setting ends-based outcomes, "[t]he very generality of the question will work against narrow favoritism." Sunstein, *Democratizing America*, *supra* note 26, at 967.

³⁸⁷ See Mashaw, *supra* note 224, at 722 (noting the negative political symbolism associated with market systems that create rights to pollute). Professor Carol Rose has suggested addressing the negative normative problem associated with entitlement to pollute by "designat[ing] pollution entitle-

Third, the debate over the goals at each level could begin to address one of the most vexing second generation problems: the impact of consumer and other diffuse source behavior on the environment. A vigorous public debate may be essential to educate the public about its role in causing many of the second generation problems, as well as its responsibility for implementing responses. This focus on the responsibilities of the general public may arise both from improvement in the quality of media coverage and from the public's increased engagement in the debate itself.³⁸⁸

2. *Other Democracy Implications*

a. *The Impact of Factions*

The allocation of emission reductions among sectors may address many of the concerns about factional control of the environmental regulatory process discussed by the democracy theorists. First, as mentioned above, public debate over the establishment of emissions targets may be more transparent and therefore harder to subvert than the current decisions based on complex BAT-driven issues. With express congressional allocations of emission reductions, it will be far harder to avoid difficult decisions through unrealistic goals or through broad delegations of complex technological solutions to the federal agencies, the states, and ultimately the federal courts. In any event, if horse-trading, factionalism, and burden-shifting are to occur, it may be preferable for them to occur through the democratically-elected members of Congress rather than through a highly technical process involving the federal agencies and courts.³⁸⁹

The process of establishing the Level I, II, and III goals itself may be susceptible to factional control, an issue that should be considered in an evaluation of any goal-setting process. Concerns about capture of the Level III goal-setting process of the Framework Approach may be addressed in part if Congress creates incentives for self-policing the

ment negatively, not as 'rights' but rather as 'emission debits' or 'penalties.'" Carol M. Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 1991 DUKE L.J. 1, 36.

³⁸⁸ See, e.g., Sunstein, *Democratizing America*, *supra* note 26, at 967 (suggesting that an ends-based approach "should bring a salutary measure of structure and sense to risk regulation in general").

³⁸⁹ See, e.g., Mark Seidenfeld, *A Civic Republican Justification for the Bureaucratic State*, 105 HARV L. REV 1511, 1570-72 (1992).

allocation process among sectors by first establishing the total emission reductions in each sector needed to meet the national Level I goal. In addition, after the creation of emission targets for sectors, every sector may have the incentive to ensure that every other sector will not pass its costs off on another sector, creating an intrinsic policing mechanism to undercut factional control.

b. Government Accountability

The Framework Approach Level I, II, and III goals also demonstrate the extent to which it is difficult to establish effective methods for government accountability in the absence of both broad and specific performance targets. In the absence of an effective Level I goal, review of the performance of each branch of government often is based on anecdotal information, rather than a systematic analysis of environmental, economic, and social impacts. In the absence of Level II goals, the EPA and the states are not judged by Congress or the public on the quality of the environment. Instead, they are forced to measure and demonstrate their performance based on “beans” — the number of permits reviewed and processed or the number of enforcement actions.³⁹⁰ Furthermore, in the absence of the explicit, allocated emission reductions envisioned by the Framework Approach Level III goals, states have incentives to rely on technology-based requirements in permits without fully investigating or addressing whether different requirements may be necessary to achieve desired ambient conditions.³⁹¹ This combination of incentives limits advances in environmental quality and induces expensive, duplicative federal oversight of state- and facility-specific actions.

³⁹⁰ See, e.g., Stahl, *supra* note 35, at 21; see also *EPA Officials Encourage Regions to Step Up Traditional Enforcement in FY 97*, INSIDE EPA, Oct. 4, 1996, at 1 (noting “bean-counting” efforts).

³⁹¹ The difficulty of allocating facility-specific or sector-specific emissions limits that are linked to ambient environmental conditions is substantial, however. The difficulty of implementing the Clean Water Act TMDL program is perhaps the best example. See, e.g., *Oregon: Final 303(d) CWA List Released, Next Step Is Development of TMDLs*, Daily Env’t Rep. (BNA) A-5, A-6 (July 18, 1996) (noting that at the current pace it will take 400 years to complete the Oregon TMDL allocation process); *Water Pollution Administration Efforts to Improve TMDL Program Under Way, EPA Official Says*, Daily Env’t Rep. (BNA) A-5, A-6 (July 16, 1996) (noting the slow implementation by states of the TMDL program).

The Framework Approach Level I goal may provide a broad performance measure for both the legislative and executive branches, enhancing public assessments of their performance. The Level II and III goals also may provide the EPA and the states with more clearly identified performance standards.³⁹² As a result, the goals may enable the legislative and judicial branches to provide more effective review of federal and state decisionmaking. With the Framework Approach Level III goals, the sources likely to be subject to greater emission reductions (to make up for the benefits granted to other sources) also will have incentives to serve as a check on congressional intervention in agency decisionmaking,³⁹³ and the media may have a greater ability to understand and explain trade-offs.³⁹⁴

c. The Role of the States

The Framework Approach also clarifies the extent to which performance measures may be necessary for a return of greater decisionmaking to the states. The history of the pre-command and control era discussed in Part II suggests that several issues must be addressed if a "devolution" to the states is not to recreate the problems that existed before the 1970s. The context provided by the Framework Approach may present an opportunity to address many of these problems.³⁹⁵

Overall, the state-federal role will be more susceptible to thoughtful re-examination if all participants in the environmental reform debate have greater certainty about the national objectives for the environment. Although many states and emissions sources seek less EPA oversight, in the absence of the easily measured and broadly accepted performance criteria that are envisioned as the Framework Approach Level II goals,

³⁹² See Stahl, *supra* note 35, at 21.

³⁹³ See Sunstein, *Endogenous Preferences*, *supra* note 90, at 217-18; Kaufman, *supra* note 168, at 34 (noting that in recent years, more than 13% of the EPA's budget has been earmarked). For a discussion of appropriations riders, see generally Neal E. Devins, *Regulation of Government Agencies Through Limitation Riders*, 1987 DUKE L.J. 456; Plater, *supra* note 8, at 992 n.40 (noting that "[c]ourts typically construe appropriation riders narrowly").

³⁹⁴ Following the establishment of the Framework Approach goals, the numerous congressional committees and subcommittees that claim jurisdiction over the EPA also may have greater incentives to coordinate their activities. See Ruckelshaus, *supra* note 230, at 27-29.

³⁹⁵ For a discussion of federalism concerns, see Stewart, *Madison's Nightmare*, *supra* note 19, at 336.

states have incentives to participate in a “race to the bottom” — to compete for new industry by lowering environmental standards. Under the Framework Approach, economic race-to-the-bottom problems may be addressed by the establishment of defined environmental conditions and the express allocation of emission reduction responsibilities.³⁹⁶ The express allocation of emission reductions may reduce incentives within sectors to seek out states with low standards. As discussed above, the environmental conditions could provide a comprehensive set of environmental targets as a basis for assessing state performance, similar to the current NAAQS and water quality standards, but across a broader range of contaminants. These substantive environmental targets could facilitate the movement away from “beans” as performance measures.

Cross-border migration of emissions is a second difficult issue confronted by devolution to the states. Calculating cross-border migration is difficult, and the incentives for states to allow migration off-site are great. The Framework Approach may offer at least partial responses to these problems. To some extent, cross-border concerns could be addressed through watershed or ecosystem-based establishment of Level II and Level III allocations. In addition, the comprehensive nature of the exercise, and its substantive basis, may create an atmosphere in which states are less likely to avoid their fair share of emission reduction responsibilities.

Agency capture on the state and local level is a third concern regarding devolution. Capture of state and local agencies, however, like cross-border problems, may be mitigated somewhat by the existence of clear sectoral and geographic performance standards. In sum, the Level I, II, and III goals may provide a starting point for reducing the overall federal involvement in state decisionmaking with less concern about sacrificing environmental quality.³⁹⁷

B. The Impact of the Framework Approach on the Environment

As discussed above, the Level I and II goals highlight the extent to which the current environmental regulatory system is unable to prioritize

³⁹⁶ In fact, the EPA recently has begun an effort to return greater decision-making to the states using performance standards. See U.S. ENVIRONMENTAL PROTECTION AGENCY, STATE PARTNERSHIP PROGRAM (1995).

³⁹⁷ Minimum uniformity requirements could still be required where necessary to maintain a national market. For example, compare the preemption provisions in the FIFRA use restrictions with the provisions in the FIFRA labelling restrictions. See 7 U.S.C. § 136(v)(a)-(b) (1994).

among the most important environmental problems, whether based on risk, public perception, or any other grounds.³⁹⁸ The Framework Approach goals also highlight the inability of the current environmental regulatory system to address second generation environmental problems. The adoption of the Framework Approach goals may provoke a debate regarding the roles and responsibilities of the general public in the second generation environmental problems. The debate, in turn, may educate the public about its role in creating and resolving the second generation problems.³⁹⁹

As discussed in Part VI.A.1, the Level III allocations also may address a frequently-noted shortcoming of the current NAAQS and water quality standards: the obstacles to federal sanctions or other enforcement mechanisms to force achievement of these ambient standards. Scholars who assert that the remaining environmental problems can be solved through greater use of coercive authority by the EPA and the states (whether through EPA sanctions to achieve the existing ambient standards, increasingly stringent technology standards, or increased state regulatory and enforcement activities) assume that the federal and state agencies can draw upon a limitless reservoir of public goodwill. The recent backlash against regulation, and the fact that the EPA's budget has remained almost flat in constant dollars over the past fifteen years despite the growth in the economy and profusion of environmental statutes, are indications that the goodwill, and thus the federal and state agencies' coercive power, has limits.

The determination of Level II and III goals also may be a prerequisite to substantial expansion of a whole range of innovative implementing mechanisms. In the absence of the context provided by the Level II and III goals, the great majority of the current incentives for executive branch decisionmakers and legislative reformers counsel against innovation. Without context in the environmental debate, decisionmakers have little basis to defend an agreement with industry or environmentalists because the decisionmakers have little or no way of demonstrating to critics that the agreement will achieve desired environmental conditions. The

³⁹⁸ See *supra* notes 173-81 and accompanying text. There have been several recent congressional efforts to require agencies to prioritize their efforts, such as the Government Performance and Results Act of 1993, Pub. L. No. 103-62, 107 Stat. 285 (codified as amended in scattered sections of 5, 31, & 39 U.S.C. (1994)).

³⁹⁹ See, e.g., Henderson & Pearson, *supra* note 352, at 1468 (noting that "aspirational commands may serve to change attitudes toward environmental protection").

decisionmakers also have little or no way of demonstrating that emission reduction costs are not unjustifiably large or are not simply being shifted from one sector to another. As a result, government agencies are more likely to use command and control regulatory approaches.

At least four types of flexible implementation schemes may be more possible under the Framework Approach:

- *Voluntary Programs.* Voluntary programs could be easier to develop and coordinate if overall emissions responsibilities have been established. These programs seek to achieve a variety of objectives ranging from implementation of sophisticated environmental management systems to voluntary toxic release reduction programs. Currently, numerous programs exist, and critics have maintained that they are not providing adequate environmental gains. Clear national goals at each level could provide a straightforward test of whether these programs are meeting significant objectives.
- *Covenants.* Covenants or other voluntary agreements among industry, local communities, public interest groups, and regulators could be easier to develop because emission reduction targets would be explicit, thus clarifying the objectives and responsibilities of the parties. Regulators and environmentalists would know that they are not giving away the store. Industry would know that the regulators will be able to hold firm to commitments for an extended period.⁴⁰⁰
- *Emissions Trading.* Emissions trading would be easier to expand to new constituents and new media. Expansion of pollutant-specific trading such as the sulfur dioxide allowance program and newly-proposed air and water emissions trading would be facilitated by an explicit determination and allocation of desired emissions levels. On a more general level, the Level III allocations may enable the development of programs in which economic sectors trade a wide variety of emission reduction requirements among themselves.
- *Pollution Prevention.* Pollution prevention efforts could be encouraged if the focus on total sectoral emissions creates

⁴⁰⁰ For a review of recent proposals to develop industry-community compliance contracts based on emissions caps, see Pedersen, *Can Site-Specific Pollution Control Plans Furnish an Alternative*, *supra* note 342, at 10,488-90; *Congress Said to Consider Legislation to Let EPA Enter Alternative Agreements*, 26 *Env't Rep. (BNA)* 1581 (Jan. 5, 1996).

incentives for new designs and technologies that reduce or eliminate emissions. Regulators, industry, and environmentalists arguably would have increased incentives to pursue pollution prevention approaches.

Of course, a less optimistic view is also plausible. As discussed above, in many areas of environmental law a focus on risk-based determinations and flexibility has translated into little or no action to protect the environment.⁴⁰¹ To produce environmental benefits, the flexibility envisioned above would have to be closely linked to the Level II and III goals, and the goals would have to be enforceable.

Nevertheless, under the Framework Approach, each of these changes would take place in a regulatory setting that is more focused on second generation sources and cross-media transfers of pollutants.⁴⁰² The Level III emission reductions, by clearly defining emission reduction responsibilities for consumers and others, may create incentives for reducing emissions from these second generation sources. Similarly, the Level II allocations may limit incentives for cross-media transfers of pollutants.

C. *The Impact of the Framework Approach on the Economy*

The Level I, II, and III goals of the Framework Approach reveal three fundamental economic shortcomings of the current system: (1) an absence of certainty in environmental requirements; (2) inflexibility in the implementing mechanisms for achieving environmental outcomes; and (3) high transaction costs. The absence of certainty is in part a function of the fluctuations in the overall environmental agenda discussed above. As Congress reacts to environmental crises by enacting new statutes that impose new, unexpected requirements, and as the pace of regulatory development shifts with changes in the public concern about the environment, future requirements become difficult to predict. The absence of certainty also occurs on a lesser scale, as agency delays and changes in policy, and judicial review of rulemakings and permit decisions, lead to extended periods of ambiguity. This absence of certainty and lack of finality also leads to changes in regulatory requirements over time periods that bear little relationship to the capital investment planning horizon of industry.⁴⁰³

⁴⁰¹ See, e.g., Houck, *Risk Management*, *supra* note 175.

⁴⁰² See, e.g., Guruswamy, *supra* note 185, at 517 (noting the growing importance of integrated multi-media approaches to environmental protection).

⁴⁰³ See, e.g., Houck, *The Regulation of Toxic Pollutants*, *supra* note 72, at

Greater certainty could be produced by the Framework Approach goals in two ways. On the national level, certainty may arise from the more stable environmental agenda discussed above. In addition, certainty also could arise from the establishment of Level III emission reduction targets. If the temptation to frequently redistribute burdens is resisted, economic sectors will know their emission reduction requirements for an extended period in the future. As a result, the Level III targets could provide the basis for more effective investment decisions.

As discussed in Part VI.B.3 above, the Framework Approach goals also may address concerns about regulatory inflexibility. Reduced emissions control costs may arise from the opportunities for regulatory innovation and flexibility provided by the existence of Level II and III goals. By permitting movement away from BAT-driven requirements, the Level II and III goals thus may reduce the over-control and under-control problems inherent in technology standards.

The Framework Approach also highlights the extent to which transaction costs are generated when individual companies, sectors, or geographic regions attempt to avoid or redistribute environmental compliance costs. The high transaction costs incurred by industry when it seeks to demonstrate that emission reductions need not be made or to shift the costs of controlling emissions have been the subject of many scholarly papers and of the discussion in Part VI.A above.⁴⁰⁴ Government, industry, and environmental interest groups all lack the necessary context to decide when to compromise or settle differences about the extent or allocation of responsibilities.⁴⁰⁵ The absence of explicit allocations encourages this activity in the environmental regulatory system, and it undermines the effectiveness of the NAAQS and water quality standards, in particular.

10,554 (noting that “[a]t bottom, the struggle is not over the ability not to pollute, but over lead time and competitiveness”).

⁴⁰⁴ See, e.g., Stewart, *Madison's Nightmare*, *supra* note 19, at 341. For a general discussion of the costs of evading regulation, see David N. Laband & John P. Sophocleus, *An Estimate of Resource Expenditures on Transfer Activity in the United States*, 107 Q.J. ECON. 959, 969 (1992).

⁴⁰⁵ The Coase Theorem (postulating that when transaction costs are low, parties will bargain around whatever legal rules exist) may be inoperative in many situations involving environmental requirements because the legal rules are unclear and are shifting, or they explicitly prohibit transferring responsibilities. See generally R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 10 (1960); Robert C. Ellickson, *Of Coase and Cattle: Dispute Resolution Among Neighbors in Shasta County*, 38 STAN. L. REV. 623, 672-76 (1986).

In contrast, the Framework Approach may reduce transaction costs by clearly identifying responsibilities at Levels II and III. The establishment of national goals for environmental conditions and aggregate emission reductions, and the transparency of clearly defined, allocated responsibilities may discourage attempts to avoid responsibilities altogether. In addition, the self-policing, zero-sum situation created by the allocated reduction requirements may discourage efforts to transfer responsibilities through litigation and other means.⁴⁰⁶ To the extent litigation occurs, the existence of the Level I, II, and III goals may produce more effective decisions by providing courts with greater context in which to evaluate particular agency decisions.⁴⁰⁷ By clearly articulating the "game plan" of the executive and legislative branches, the Framework Approach thus may not only reduce transaction costs but also may improve court oversight of agency decisionmaking.⁴⁰⁸

Of course, the economic impacts of the Framework Approach would not all be positive. The initial establishment of the Framework Approach goals could provoke an initial burst of transaction costs as parties attempt to lobby and litigate to shape the development of the goals. In the long-term, if the Framework Approach goals were constantly subject to amendment, the transaction costs could remain high.

Changes to the Framework Approach goals also could undercut the certainty regarding emission reduction requirements. Changes to a sector's requirements could result from scientific advances, litigation, new public opinion, or new political choices. Although changes could undercut the benefits accruing from the certainty of the investment horizon for industry, it is realistic to expect that a significant, if periodic, evolution of the Framework Approach goals would occur.

⁴⁰⁶ In addition, fewer final government actions (e.g., regulations and permitting decisions) may be needed, resulting in fewer actions to litigate.

⁴⁰⁷ See *Alabama Power Co. v. U.S. EPA*, 40 F.3d 450, 455-56 (D.C. Cir. 1994) (interpretation of a statute that leaves the EPA with the need to look elsewhere to find emission reductions). *But see* Lynn M. Gallagher, *Clean Water Act*, in *ENVIRONMENTAL LAW HANDBOOK* 135 (Thomas F.P. Sullivan ed., 13th ed. 1995) (asserting that the existing Clean Water Act goals already provide significant guidance to courts and the EPA).

⁴⁰⁸ See, e.g., Farber, *supra* note 8, at 1296. For example, the relative importance of any particular environmental regulation is much more understandable, and actions to achieve the standard are subject to more intelligent interpretation by courts, when the value of achieving the standard is expressed in terms of achieving an agreed-upon state of the environment and allocation of sectoral responsibilities.

In addition, pressures on the goal-setting process could lead to delays that could undermine its benefits. The acid rain trading program, which is largely regarded as successful, was the product of many years of contentious scientific and policy disputes, although the actual establishment of emissions limits and allocation of emissions rights in Congress, as well as the implementation of the program by the EPA, proceeded relatively quickly. In contrast, a long-standing attempt by the EPA and the states to allocate emissions rights within watersheds under the TMDL provisions of the Clean Water Act has been slow to develop.⁴⁰⁹ The experiences of the acid rain and TMDL programs may suggest that an initial legislative allocation of responsibilities is necessary to avoid extended delays in establishing and implementing an allocation system.⁴¹⁰

Finally, the Framework Approach also may generate a new focus on second generation sources, which could bring to the fore conflicts between point sources and second generation sources that have been only latent until now. These conflicts could block development of the Framework Approach goals and produce delays and litigation regarding the implementation of the goals. At the same time, it may be precisely these types of issues (e.g., determinations of responsibilities between point and non-point sources) that should be resolved through the type of process envisioned by the Framework Approach and that cannot be avoided indefinitely by the command and control system.

CONCLUSION

The turbulence of the environmental debate over the last decade suggests that the command and control system may not provide viable solutions to the remaining environmental problems. The incrementalism

⁴⁰⁹ See *supra* note 142 (noting that at the current rate it will take Oregon 400 years to fully implement the TMDL program).

⁴¹⁰ Litigation over the implementation of the system also could undercut the efficiency and certainty of the Level II and III goals. The acid rain trading program, for example, has not been developed without litigation, although the litigation has not impeded the program. See, e.g., *Indianapolis Power & Light Co. v. U.S. EPA*, 58 F.3d 643 (D.C. Cir. 1995) (reviewing the EPA's interpretation of allowance trading program provisions). Litigation regarding the TMDL program to date has largely involved environmental groups' attempts to force the EPA to implement the program more quickly. See *supra* note 142 (noting that approximately 15 lawsuits have been filed to require implementation of the TMDL program).

that has characterized environmental reform efforts of the last decade is certainly understandable: the environmental regulatory system is critical to the future of environmental health and safety, enormously expensive, and an important role of government in our democratic system. Reform efforts that threaten to undermine the environmental gains, increase economic impacts, or upset important constituencies therefore meet with substantial skepticism.

Yet the threads of a genuine reconceptualization of environmental law are beginning to emerge. The importance of environmental outcomes or performance indicators is becoming clear, as is the potential democracy benefit of a debate and decisions about those outcomes. Despite real gaps, the growth in data collection and ecological understanding in the last twenty-five years, as well as the development of a floor of BAT and other requirements, may provide both the means to assess and to debate desired environmental outcomes, and the means to ensure that existing environmental protections will not be swept away before the efficacy of substitutes is clear.

The Dutch experience suggests that incremental reform may not be the only, or even the best, way to achieve the potential environmental, economic, and democracy benefits of environmental laws. Although the differences between the Dutch and American systems and the feasibility of establishing an ambient conditions-based system, in particular, raise difficult questions, the three-level Framework Approach may provide a conceptual design that will lead us to ask new questions about environmental law reform and ultimately to re-establish the missing link between environmental outcomes and environmental law.